SEVENTY-EIGHTH ANNUAL MEETING

OF THE

British Medical Association.

Held in London on July 22nd, 23rd, 25th, 26th, 27th, 28th, and 29th.

PROCEEDINGS OF SECTIONS.

SECTION OF NAVY, ARMY, AND AMBULANCE.

Colonel ANDREW CLARK, A.M.S.(T.F.), President.

PRESIDENT'S INTRODUCTORY REMARKS.

AFTER a few initial observations Colonel ANDREW CLARK said: It may be said that some of the subjects we have put down encroach on other Sections, and perhaps they do in a certain sense, but they are essentially of interest to the services, and this Section was instituted several years ago with a view to providing opportunity for laying special stress on subjects which though of general interest have a very special reference to our army and navy. Those that occur to me as coming under this double category are the first on the list for each day. It is not my intention to occupy much time in introductory remarks; indeed, presidents have been specially requested not to do so, but I should like to make a brief allusion to the relation of the Association to the services. The Territorial Force, consisting as it does of civil members of the profession both in special and general practice, comes in more direct contact with the bulk of the members of the Association at home than does the regular army, and serves to a considerable extent to bind the services to the Association at home; and as it now extends all over the empire, our oversea Branches, which are continually increasing in number, are not a little helped in carrying on the work of the Association, both professional and social, by officers of the army and navy who are from time to time stationed abroad, and they are able to inform the executive of the requirements of various localities which differ very much; and one of the main reasons that determined the Association to seek a Royal Charter, giving more extended powers than those possessed as a limited liability company, was to benefit the oversea Branches. We are not to have the Charter—at any rate, at present—but I hope and believe other means will be found to afford the facilities required. Of late years we have had representatives of the services on the Executive Council, and this has been the means of bringing them and their requirements as well as the oversea Branches into touch with the Association. The formation of the Territorial Force gave the opportunity of the complete reorganization of the medical service of the yeomanry and volunteers, and the formation of a medical corps capable of enabling the force to be independent in its medical organization in case of mobilization, and I think I may venture to claim that representations made by the British Medical Association helped to effect this. I cannot conclude these few remarks without expressing my personal thanks to the honorary secretaries, who have, I know, worked very hard in obtaining, sorting, and arranging the material offered, so that the work of the Section may be interesting, profitable, and practical.

LOCAL AND SPINAL ANALGESIA IN RELATION TO ACTIVE SERVICE.

By Major C. G. SPENCER, R.A.M.C.

SURGICAL work on active service may, for the purposes of this paper, be considered under two heads: the immediate treatment of the wounded during and after an action, and the subsequent treatment of the cases when they have reached a "stationary" or a "general" hospital.

The early treatment is carried out in the field ambulances, and here little more than first aid can be attempted. The removal of the wounded from the field and their evacuation towards the base is the primary duty of the field medical units. All recent experience has shown that at this stage no operation should be undertaken unless it is urgently necessary.

Anaesthetics will therefore be required chiefly for securing wounded vessels, for putting up some compound fractures, and very rarely for any other purpose.

Local analgesia is not at all suitable for this kind of work. It is suitable only for operations in which every step is accurately known beforehand. The field of operation is strictly limited to the area infiltrated with the analgesic solution. If the injection is made into a nerve trunk, or by Bier's method of injection into the veins, the area rendered analgesic is increased, but these methods are not very suitable for field work, being complicated and difficult, and requiring special experience on the part of the operator. The difficulty, often amounting to impossibility, of ensuring asepsis under field conditions is another objection to the use of local analgesia. Perhaps the most weighty objection of all is the time required to produce satisfactory local analgesia. Rapid work is essential in dealing with large numbers of wounded, and it takes far longer to obtain adequate local analgesia than to give a general anaesthetic. The temptation would inevitably be to operate before the injection had taken its full effect, to the detriment of the patient and the hindrance of the operator.

One advantage of local analgesia is that it dispenses with a separate anaesthetist. It might be useful for a medical officer who was single-handed, in charge of a detached body of troops, should he be compelled to operate without assistance. Even then it would hardly enable him to attempt much more than the removal of a superficially lodged bullet. I am aware that many major operations have been done under local analgesia, but I should be sorry to attempt one in the field, unless the supply of chloroform were exhausted.

Spinal analgesia I regard as having no place at all in field work. At the best it is a somewhat uncertain method, and it demands special experience, time, and most careful attention to a multitude of details for its success. Perfect asepsis is essential, and this, as I have already said, cannot be guaranteed under the circumstances attending work in a field ambulance. The assistants at the operation must be thoroughly conversant with the special requirements of the method, the posture of the patient must be very carefully adjusted, and after the operation complete rest for several days is absolutely necessary if the unpleasant after-effects of spinal analgesia are to be avoided. As every wounded man has to be removed down the line of communications by road, rail, or river, within a few hours, that alone renders spinal analgesia altogether inapplicable to field work. It is, in its present stage of development, too delicate and complicated a procedure for the hasty emergency work in a field ambulance.

In the stationary and general hospitals the conditions of surgical work are practically the same as in a military or civil hospital in time of peace, and the special difficulties attending work in the field have not to be faced. Here the choice of an anaesthetic may be made according to the nature of the case, and local, spinal, or general anaesthesia may be employed as the surgeon may prefer.

In these remarks I have throughout referred to local analgesia by Mr. A. E. Barker's method, with eucaine and adrenalin, and to spinal analgesia with a solution of stovaine and glucose, a method also devised by Mr. Barker, and one that has been employed in nearly 400 cases at the Queen Alexandra Military Hospital during the past three years.

DISCUSSION.

Mr. A. E. BARKER said he fully endorsed all that Major Spencer had said. His remarks appeared to cover all that could be concluded at the present time about the use of the newer methods in military surgery, and it was a satisfaction to everyone that one versed in these procedures should have, to a considerable degree, helped to crystallize our ideas on the subject about field service. There had been a tendency in several quarters rather

to force the pace in regard to the newer forms of anaesthesia, without sufficient knowledge and experience, and Major Spencer's remarks would help to put a slight check on hasty conclusions and rash action.

Fleet Surgeon A. G. Wildey said that he was disappointed to hear such discouraging views on the subject of local and spinal analgesia in the field. He looked to early nerve-blocking to relieve much agony in mangled wounds, and by lessening shock and facilitating transport afford some hope of successful primary amputation. He thought that they should not let difficulties stand in the way. Let anatomists show them how to safely and readily reach the nerve trunks with the hypodermic needle. The matter of asepsis could be overcome. He thought the risks attending spinal analgesia should be taken in cases where a general anaesthetic given by an inexperienced person would probably be more dangerous.

Captain J. W. H. Houghton said that, while agreeing entirely with the remarks of Major Spencer and Mr. Barker, he thought the uses of local and spinal analgesia would not be so limited on active service as they indicated. Of course, in a field ambulance, operations of any description were only undertaken for the most compelling emergencies. But in base and stationary hospitals those methods had a very fitting place. There the qualities demanded were efficiency of action, rapidity in effect, and simplicity of administration. In skilled hands those attributes were found in the use of local and spinal analgesia, while the aid of a skilled anaesthetist could be dispensed with, and thus another medical officer freed for more important duties in the rush of work inseparable from the admission of a number of wounded after an action.

Fleet Surgeon P. W. Bassett-Smith said, speaking from a bacteriological point of view, he thought the bogey of sepsis in those small surgical proceedings—namely, injections of fluid—was exaggerated. They knew in 10,000 cases of vaccine treatment how the subcutaneous injections under the skin and in tissues practically never produced sepsis if ordinary care was taken in sterilizing the skin by spirit methods as well as the syringe and the solution.

HYPODERMIC INJECTIONS IN "ACTION": SUGGESTIONS FOR SIMPLIFYING THEIR ADMINISTRATION.

By Fleet Surgeon A. G. Wildey.

In such actions of war as naval engagements, when casualties are numerous, and caused almost entirely by the results of shell fire, the first attentions of the surgeon and his assistants, professional and lay, will be required for the arrest of haemorrhage, for the relief of pain, and for the lessening of shock. Later, when opportunity occurs, dressings can be applied and surgical details carried out. Here we are dealing with the immediate relief of injuries of great severity—smashed and mangled tissues; compound fractures with dragged and lacerated nerves, sending unceasing afferent impulses of pain and shock; wounds too extensive and too contaminated to allow a hope that such first-aid dressings as may be applied under the circumstances can render them sterile—wounds more eager for anodynes than for immediate antiseptics.

The earliest possible relief from *pain* is a most urgent matter, not only from a humanitarian point of view, and for the lessening of shock, but also on account of the demoralizing effect of the severe suffering of the injured upon the minds of the uninjured crew. An instance typical of this demoralizing effect occurred, it is stated, during a naval action in the Russo-Japanese war. In this case the shrieks of a wounded man—his thigh pinned by jagged iron plating in a fighting-top of a cruiser—most seriously distracted, if they did not actually demoralize, the guns crews on the upper deck. In such circumstances it is hardly an exaggeration to say that the well directed hypodermic needle of the surgeon may be a most efficient factor in the fight. Indeed it may be worth a broadside.

Tourniquets, pressure forceps, and hypodermic syringes, with perhaps the iodoform dusting dredger and the iodine spray or sponge, must take the first places in the surgeon's armament when a pause in the action permits him to reach the wounded.

While much ingenuity has been expended upon the simplification of tourniquets, resulting in their extreme handiness and efficiency, they remain, unfortunately, most painful appliances. Of pressure forceps we have a great variety; but we are still in want of some light, strong, and inexpensive form of easily applied haemostatic clip—something as mechanically simple as the safety pin and costing almost as little—for with such instruments controlling haemorrhage we might avoid in many cases the prolonged application of the tourniquet, which, apart from other dangers, adds, by increasing pain, so greatly to shock. Still more are we in want of some contrivance to simplify the charging of the hypodermic syringe—to ensure rapidity of action and certainty of dose. This operation, so easily performed at the bedside, is beset with many difficulties in the disturbing conditions attending the administration of injections in strenuous times afloat, in the field, or on such occasions in civil practice as railway accidents, earthquake disasters, etc., when very many wounded require attention.

To attempt to charge the syringe directly from a bottle of stock solution, or first to pour the morphine into a shallower vessel, is to invite such accidents to the stock as the capsizing of the bottle or the exposure of its contents to the dust and débris of action, with consequent blocking of the needle. To break glass ampoules and charge the barrel dose by dose is a slow procedure, and requires more delicacy of handling than the circumstances will allow. Consider what these circumstances are likely to be during or immediately after a big engagement afloat. The bowels of a battleship! The air, save the mark! thick with the fumes and reek of the fight, and charged with solid particles dislodged by explosions or by the concussion of a parting shot at the enemy; dim artificial light, perchance failure of the electric circuits; the decks flooded by the fire hoses, and not unlikely acutely inclined by the heeling of the ship with a damaged compartment, or rolling disabled in the trough of the sea. The traffic in the narrow passages congested with stretcher-bearers and their burdens, with such wounded who are able unaided to seek the surgeons' quarters; all hustled by hose parties rushing to extinguish an outbreak of fire. And then imagine the surgeons and their untried lay assistants—the chaplain and the paymasters—with syringes and stock bottles, pots, or ampoules, striving to fill the instruments and to administer injections quickly and efficiently. It is more than probable the stock bottles will be upset, or the solution fouled and the needles blocked, broken, or lost.

To overcome these difficulties we require (1) an unspillable bottle with protection for its contents under all circumstances; also we should have (2) a metal scabbard attached to the coat to readily and securely hold the needle-fixed syringe when not in actual use; this would be a great convenience when we consider there may be no safe place to deposit the instrument when both hands are occupied.

Some time ago I contrived a simple and inexpensive shallow glass reservoir to hold not less than 1 oz. of solution, and fitted with two or double-layered india-rubber detachable caps. Through these caps the needle of the syringe can be thrust into the solution, the syringe rapidly and easily filled—the more rapidly and easily because the needle is steadied by the hold of the rubber. On withdrawing the needle the punctures, of course, close, and if the needle has been entered diagonally the punctures are valvular, thus completely preventing any leakage, and allowing the reservoir to be carried in the pocket in any position or kept suspended by a lanyard. The slight lateral pressure on the needle while charging the syringe prevents the formation of a vacuum. This morphine bottle, with important modifications as to the quality of the glass—as suggested by Mr. Hooper, dispenser-in-charge, Royal Naval Hospital, Haslar—has been adopted by the Admiralty for issue in field chests and to the service afloat. An experimental metal scabbard for the syringe, constructed on board to my rough designs, answers the purpose for which it is required.

Amongst other advantages the shallow rubber-capped morphine vessel admits of injections being given in the dark, provided always the strength of the solution is such

that one complete syringeful is one dose, a very necessary arrangement on active service when one may have to rely on lay assistants. In the dark it is quite easy to discover if the syringe is properly charged, by testing the sense of resistance when compressing the piston, and at the same time closing the end of the needle by pressure of the finger and thumb; very little practice will enable one to distinguish between compressible air and non-compressible fluid.

Morphine vessels can be quickly extemporized by tying two layers of tobacco-pouch rubber over the necks of suitable bottles; or, an excellent plan is to cut a hole rather more than half an inch in diameter in the thin metal screw-cap of a Wulfing's formamint bottle, exposing, like a drum-head, the thick rubber washer with which it is fitted. When well screwed down the bottle is perfectly water-tight. But whatever apparatus is used morphine solution must not be kept for more than a few hours in any but amber-coloured alkali-free glass vessels or gradual precipitation of the alkaloids occurs. Solutions of sulphate of morphine $\frac{1}{6}$ grain in each 5 minims, with and without atropine, for use in the rubber-capped bottles, are now supplied to the naval service. The sulphate salt, I understand, is the most stable, and in the strength mentioned does not crystallize out in cold weather.

In morphine solutions we have the most generally useful injection for the soothing of pain, while its calming action on the circulation aids materially the control of haemorrhage; but equally important are injections of local analgesics and of antishock and haemostatic drugs.

It is not impossible that "nerve-blocking" may be attempted quite early in the treatment of the seriously wounded. Injections of local anaesthetics into the neighbourhood of the great nerve trunks of the limbs may help to cut off the fearful storm-areas of the mangled limbs from the central nervous system, and, by arresting shock impulses, mitigate the agony and dangers of transport, and add to the chances of recovery from a primary amputation. All these injections would be facilitated by the use of rubber-capped bottles; several different drugs can be kept ready to hand if the bottles are of distinctive shape. Armed with these simple contrivances, the surgeon, freed from the embarrassments of the exasperating petty manipulations usually associated with hypodermic injections, can the more speedily and the more efficiently relieve the sufferings of the wounded in action, and prepare them for the ordeal of the operating table.

DISCUSSION.

Fleet Surgeon BASSETT-SMITH said every endeavour should be made to simplify treatment in emergency, as Fleet Surgeon Wildey had brought forward, but rubber-top bottles had been employed for a very long time for vaccines, and were most excellent; in the tropics, however, rubber rapidly deteriorated, and was therefore not suitable for such climates.

Surgeon-General G. J. H. EVATT suggested that instrument makers be invited to construct a hypodermic needle with a metallic case containing morphine solution, and so made that it could be attached to the needle, squeezed, and then thrown away.

Fleet Surgeon WILDEY, in reply, said the perishability o rubber had been taken into account. The rubber caps would be required only on emergencies when the conditions would be strenuous. He had suggested they should be supplied in hermetically sealed tin boxes holding six caps, for use in the tropics. He had considered the use of rubber bulbs with needle attached, such as were introduced by Mr. Ward Cousins many years ago. Here there was a real difficulty of preserving the rubber and a difficulty of inserting the needle without discharging the injection prematurely.

THE TRAINING OF THE TERRITORIAL R.A.M.C.

By Colonel P. BROOME GILES, V.D.,
A.M.O. 1st London Division T.F.

CONSIDERING the vital importance of efficient medical organization in the time of war, and that the efficiency will be tested directly the order to mobilize is issued, it is surprising more detailed instruction is not specifically laid down in the R.A.M.C. manual or in the Field Service Regulation.

It is necessary to realize that, though a period of six months is intended to be allotted to combatants subsequent to mobilization to perfect their peace training, this cannot apply to the R.A.M.C. Even if a magnanimous foe were willing to accord equal grace to combatant and medical units alike, the power above which shapes our destinies will not fall in with so broad-minded an idea. For, directly mobilization commences, from that moment sickness commences, and accidents occur necessitating the services of the R.A.M.C.

In the past general after general has bitterly lamented the wastage caused by sickness, often to a great extent avoidable. Campaigns have been futile or prolonged, because the sick roll has reduced the fighting personnel either too low to warrant success, or the protection of the sick has required so many troops that strategic operations were hampered. No one knew better than Wellington how the accumulated sick lessened his mobility, or how strategically important it was to have a superior fighting force at a specific time. This is driven home when we realize that the success of Japan in the late Manchurian war was due to an efficiently trained R.A.M.C.—that is, the success was primarily the doctors'.

Without wearying you with statistics, I take it to be an established fact that sickness, and that chiefly of a preventable nature, far exceeds the casualties of the actual shock of war—sickness that in a lesser degree is common to all communities, and which tends to increase under similar conditions in civil life, as when people are crowded together, their nervous systems overtaxed, and their food supply indifferent or reduced in quantity. Accepting this, the general whose medical staff best prevents this sickness is in a better position to successfully conduct a campaign than he with an inefficient medical service.

The Territorial R.A.M.C. are in one way more fortunate than their regular *confrères*, as they possess their own transport, and they know that the clearing from the field ambulances should be carried out by their voluntary aid detachments.

In peace the administrative medical officer is responsible for the training of:

1. The regimental stretcher-bearers,
2. The field ambulance,
3. The sanitary company,
4. The general hospitals,
5. Certain of the voluntary aid personnel,

all of which require separate and different treatment.

In my humble opinion, the ultimate goal—that is, the work expected on mobilization—is the direction in which each line of medical assistance should be trained.

1. The regimental stretcher-bearers should receive from the medical officer attached to their unit instruction in first aid and sufficient drill so that they can work at a stretcher, load and unload any injured as little harmfully as possible; but hours spent in perfecting drill, even if not wasted, could better be employed in acquirin first aid.

This instruction should be given as a course, and the men not permanently segregated as medical orderlies; each year it is better to instruct fresh men, for in action you cannot have too many with a knowledge of first aid. In camp, on all parades which the medical officer attends, a stretcher squad should be told off for emergencies, and opportunity taken to impart instruction, and the men pointed out any advantages or risks the surrounding country possesses in approaching and dealing with removing the wounded.

Similar work can be carried out with the brigade training, and care taken in combined movements that the stretcher squads remain with and do not lose their units: the medical officer should select, and explain why he selects, the places for the wounded to be collected at. Dummies on these days are required.

On field days similar work; but unless there are orders for dummies to fall out, attention would be better directed to intelligently conforming with their unit and attending any real casualties that may occur.

Each unit medical officer should get in touch with his field ambulance and inform the officer commanding where he intends collecting his casualties.

2. *Field Ambulance*.—During the year and previously to camp all the general instruction and drill should have been completed, the sections organized under their officers and at the several marches out with transport should be so forward that two days in camp should be amply sufficient for all ranks to shake down into their respective places.

Now two important questions arise:

1. Shall the field ambulance training be a real thing, a training centre, or shall it merely be an appendix to a brigade, perfunctorily treating such dummies as may be arranged for on field days?
2. As the amount of sickness should be very small, shall a detention hospital be established for the period of camp, or shall each field ambulance deal with its own sick?

Here there is divergence of opinion, I have tried both ways and strongly recommend: (1) That the field ambulance be a training centre; (2) that each field ambulance deal with its own sick by daily detailing sufficient personnel, equipment and transport for that purpose, and so leave the remainder free to exercise; go on trek or bivouac away from camp. This not only teaches the R.A.M.C. their tented duties but accustoms the combatants to use their field ambulance as they would have to on mobilization.

Having settled these points, general training should be sectional, supervised by the officer commanding. I cannot too strongly urge the importance of placing as much responsibility as possible upon the sectional officers; the officer commanding who combines everything from corporal to officer commanding is a mistake, he fosters irresponsibility and creates slackness. During the early days of camp the adjutant and the R.A.M.C. school permanent staff should in turn be present with the units, and suggest improvements and point out any faults. During the training, one day at least the field ambulance should work with its brigade, and under a scheme of the brigadier, getting from that officer his entire plans, so as to distribute his unit as best he can. If dummies can be obtained, a joint exercise with the regimental stretcher bearers is best. On divisional field days, naturally, the field ambulances will be with their brigades; the work may be either simply tactical, or a combination of that and exercises with dummies.

I am greatly in favour of the

(1) Field ambulances on one day going out and keeping their relative positions in an imaginary attack or defence upon a position representing what a division would have occupied—say a frontage of 4,000 yards—and treating casualties systematically placed by the adjutant, who from his experience knows how probably a real fight would have influenced their position. Such a deliberate scheme takes time, and allows of correction when wrong.

(2) Mobilizing a field ambulance as complete as the peace equipment permits, each unit finding a section. This roughly leaves five days for what I consider very valuable training, that is, send your units out on the trek ten, twelve, or fifteen miles and let them do all for themselves, bivouacking if the weather be fit, and let the adjutant in turn accompany them.

3. The Sanitary Company training during the year is more restricted than I should like. There is practically no equipment, and strenuous steps should be taken to put these units in possession of proper training machinery. For camp training one of two courses is open, either to send the personnel to the School of Sanitation at Aldershot, or to employ them upon their specific duties in camp. Here again there have been different methods adopted.

No. 1 Company under my care went to Aldershot last year, and had a course of practical instruction; recently at a week's end camp I saw specimens of their excellent work. This year the company is detailed to the combatant units to perform the duties they would on mobilization. Those not thus employed will be in the R.A.M.C. camp, and will construct specimen works to demonstrate sanitation, etc., for the benefit of the combatant units. On the other hand, No. 2 Sanitary Company were attached to their troops last year, and will, I believe, attend at Aldershot this. I am keen to see which method does best.

Whilst on the sanitary companies, I think that where there is one the water purifiers during the year would obtain greater benefit if trained with them than they could when trained at the head quarters of a field ambulance.

4. *General Hospitals*.—Up to the present these units have been trained at military hospitals, still I feel sure that if with their peace strength they furnished a section of a hospital near their division once every three years it would be advantageous to all and popular. Both in the field ambulances and general hospitals the compounder is the weak spot, as it was in the old bearer company; the dearth during the late war was serious. Those men who would face the long course of instruction cannot as yet obtain pay for their time, but I hope eventually the authorities will realize the danger of the position, and give a composition sum for this purpose.

5. *Voluntary Aid Detachments*.—As these units now (Territorial Regulations, paragraph 75) to some extent are in contact with the administrative medical officer, nasmuch as he has to arrange for certain of their personnel to expand the general hospitals, and as all will be more or less associated with the Territorial R.A.M.C., it seems not the right course to have them instructed and examined by civilian societies, the more so to let them remain the shuttlecock of rival factions.

As the administrative medical officer forms boards of officers to examine all ranks of the R.A.M.C. and the regimental stretcher-bearers, it only seems right that, for the purposes of co-ordination of the voluntary aid detachments with the R.A.M.C.(T.), they should be taught and examined on similar lines.

As detachments are formed, let the medical men who will be their commandants or R.A.M.C.(T.) officers be appointed to teach, supplemented in the practical by non-commissioned officers or nurses. When the course is completed let the administrative medical officer appoint a board to examine and give to each approved person a certificate similar to (but to include nursing and sanitation) E 596, now given to regimental stretcher-bearers, and a badge. This preliminary course of instruction to consist of twelve hours lecture and questions, and twelve hours practical, divided: 5 first aid, 5 or 4 nursing, 2 or 3 sanitation. Payment for instructing and examining to be made by an annual grant of 10s. per head, limiting the number to 1,000 for each division.

This done, you would have all the Territorial medical lines under one authority co-ordinate in teaching with the regulars.

MEDICAL REQUIREMENTS IN WAR: WITH SUGGESTIONS FOR ASSISTING THE R.A.M.C. ON MOBILIZATION.

By Lieutenant-Colonel E. M. Wilson, C.B., C.M.G., D.S.O., R.A.M.C.

The number of officers of the R.A.M.C. usually at home is 638 and the peace establishment of warrant and non-commissioned officers and men is 3,065. The number required to complete the medical establishment on mobilization for 6 divisions, a cavalry division and army troops is 840 officers and nearly 9,000 men.

These figures alone show that an enormous addition must be made to the peace establishment of the corps in both officers and men almost immediately on the declaration of war, especially when it is remembered, first, that all the military hospitals at home must be carried on somehow, and that they will be fully occupied, at first temporarily by unfit recruits and afterwards more permanently by invalids; and secondly, that we may be sure, from the rapidity of modern operations, that the demand for reinforcements will not be long delayed.

My object in submitting these brief notes to you is first to summarize the preparations which have already been made to meet this great demand for trained men, and secondly to make a few suggestions as to the means by which every member of the British Medical Association may help in his own sphere, in his own locality, in his own way, in what may fairly be called a national service.

And first, to clear the ground, I do not wish in this short article to touch except incidentally on the Territorial Medical Service. Not, of course, that we do not very highly value the R.A.M.C.(T.), but because it has a most important duty to perform to which it is definitely allotted—namely, to provide the medical organization for the fourteen divisions of the Territorial Army and twenty-three general hospitals; and, if we were involved in a great war with practically all the regular forces employed

abroad, it seems essential that the Territorial Army should not be robbed at that time of its most efficient personnel.

Volunteers no doubt there would be in the future as in the past, gladly welcomed, but I do not think we ought to rely on the R.A.M.C.(T.) as a body to leave the duties for which they engaged in order to fill up the gaps in the army abroad. With a view of supplying additional medical officers for the expeditionary force, the Special Reserve of Officers R.A.M.C. was created in an Army Order last year, and in an article which appeared on March 12th in the BRITISH MEDICAL JOURNAL I detailed the conditions and requirements. Perhaps I may be permitted to very briefly recapitulate them:

Candidates must be fully qualified and under 30 years of age. They undergo a course of three months' training at Aldershot, receiving pay at 14s. a day with allowances for a servant and for lodgings, a gratuity of £20 for uniform, and, after passing an examination at the end of the course, an annual gratuity of £30 up to the age of 40. After three and a half years there is another course of training before promotion to the rank of captain; this course lasts one month. It may be undertaken at the head quarters hospital of the military command most convenient to the officer, and the pay is the same *plus* 4s. a day messing allowance. Promotion to the rank of major is given after twelve years' service.

But additional advantages are given to students who are members of the Officers' Training Corps and who subsequently qualify. These gentlemen get an additional gratuity of £35, and on joining at Aldershot when they have passed professionally if they have obtained certain certificates while in the Officers' Training Corps their course of instruction is correspondingly diminished. Up to the present time about forty officers have passed through the school at Aldershot. Surely this does not represent the total or even an annual average of young medical men who are willing to serve their country in time of war.

Another source from which I venture to suggest a considerable supply of trained medical men could be obtained in an emergency is the St. John Ambulance Brigade in England and the St. Andrew's Ambulance Corps in Scotland. Medical men who have been active members of those organizations for a period of years, say four or five and upwards, might, if they desired to be registered for employment in military hospitals at home or in the field, be given dormant commissions to take effect whenever mobilization is ordered. They have been accustomed to deal with men, to train and command them, and have acquired knowledge of administration in their camps and exercises. For such men, and I believe there are many, the Aldershot course might be modified or dispensed with, and on mobilization their commissions dated from their registration, subject of course to their remaining efficient with their brigade or corps. In this way I believe we should get a considerable number of well-qualified medical officers, and the *esprit de corps* of the St. John Ambulance Brigade and the St. Andrew's Ambulance Corps would be correspondingly raised, as officers and men would feel that they were an integral part of national defence.

It would be as well to grant a small annual retaining fee and to require a month's notice before withdrawal, as in the case of the officers of the Special Reserve, but the essential point is to recognize medical *officers* of the St. John Ambulance Brigade and the St. Andrew's Ambulance Corps as well as their men as a definite part of the reserve of the R.A.M.C. on mobilization.

There is one other class of medical men to which I might refer before leaving the subject of officers. There are about 150 retired officers of the R.A.M.C. below the age of 55. Some are employed like myself in retired pay appointments, but there are many others who would no doubt be ready to rejoin their old corps and perform their former duties at short notice in a time of emergency.

Turning now to the branch with which I have been more intimately connected during the past few years, the provision of trained subordinate personnel for medical units on mobilization, it may be noted that when the South African war commenced the total reserve of the R.A.M.C. was under 1,000, and that it is at the present date 4,500. How has this great addition to our reserve been obtained?

First, by the enlistment during the years 1906–1907 of 600 men for one year's colour service and eleven on the reserve.

Secondly, by the transfer last year of nearly 1,800 infantry reservists to our reserve after a three months' course of training in corps duties; and thirdly, by the compulsory transfer to the reserve of all three years' men except those actually required to complete the annual drafts for foreign service.

This last decision of course necessitates a somewhat strict system of selection, as in consequence of the large number of additional non-commissioned officers who would be wanted on mobilization it is useless to retain men who would not be fitted to fill higher positions in case of need. Nearly all serving soldiers of the corps whose services have been extended from three to seven years and onwards have, therefore, either passed for promotion or have qualified in some special capacity as nurses, cooks, clerks, dispensers, skiagraphists, laboratory attendants, etc., and in the great majority of instances are available for employment both as non-commissioned officers and specialists.

With a small peace establishment every serving soldier must be highly trained, the routine duties being performed by reservists recalled to the colours.

Behind, and in addition to our own reserve, comes the Special Reserve of the corps. This body was created in October, 1908, when the R.A.M.C. militia was disbanded, a certain number of the latter corps, including a few non-commissioned officers, joining under the new conditions. Recruits were given six months' training on enlistment, and have an annual training of fifteen days. The enlistment of 1,000 men was authorized, and recruiting ceased in November last. The numbers are already diminishing, the present strength being about 940. These men are not eligible for promotion, and cannot transfer to any other branch of the army or Special Reserve. I said at the commencement of these remarks that as this paper is only meant to deal with the medical requirements of the expeditionary force abroad I should only refer incidentally to the R.A.M.C. (T.), but we have another reserve (Category "B") provided by our Territorial comrades. Men volunteering for this reserve are seconded or supernumerary in their own Territorial unit, and would join the expeditionary force on mobilization. The number so volunteering is at present nearly 800. They are all trained and kept efficient in their own corps, and would be a very valuable reinforcement to our ranks, as they were during the South African war.

I think from the foregoing statement you will agree that if war broke out to-morrow we should be in a better position to meet it than we were in October, 1899.

But what of the hospitals at home? For you will realize that when nearly all the trained personnel of the corps march out of all our great military hospitals the *sick* will be left behind, and the number of beds occupied will, it is certain, steadily increase instead of diminishing. Arrangements have been made by the War Office for the R.A.M.C. to be replaced by men of the St. John Ambulance Brigade, and in Scotland by the St. Andrew's Ambulance Corps. Men volunteering for this service join the "Home Hospitals Reserve," and guarantee to undertake duty in the military hospitals at home. Personally, from my own experience, I am afraid that, although I am sure they will do their duty well, they will be more keen to join the force abroad than to perform ordinary routine work at Woolwich, Netley, or Aldershot. During the South African war 2,300 men of the St. John Ambulance Brigade went abroad, but I could only get some twenty or thirty for hospitals at home.

If the military operations lasted any length of time, I expect a good many would find their wishes gratified as reinforcements were required. From the St. John Ambulance Brigade more than 2,000 men have registered their names, and from the St. Andrew's Ambulance Corps, which is intended for service only in Scotland, it is practically certain that sufficient volunteers will be forthcoming to supply the staff necessary for all the Scottish military hospitals.

I have indicated briefly what are likely to be the medical requirements of war, and explained the arrangements which have already been made to meet the demand for trained officers and men. Now I should like to suggest in what way the members of the British Medical Association can assist in what is undoubtedly a national service.

First, I think we might all use our influence to encourage young medical men, and especially medical students, to

join the Special Reserve of Officers or the Officers' Training Corps. The conditions are made as easy as possible, the training is excellent, and, whether they are ever required to fulfil their engagements or not, the knowledge and experience gained will be of value to them in after life. Among those who cannot incur the obligations of the Special Reserve, surely there are many who might join the local corps of the R.A.M.C.(T.). In training the rank and file who are eager to learn they will be performing a valuable service to the State. Every man is the better for a knowledge of drill, stretcher drill, and first aid, and if a medical man is unable to spare the time as a commissioned officer of the Territorial Forces, he can at any rate join the nearest division or corps of the St. John Ambulance Brigade.

In this connexion I should like to draw attention to the value of lectures in sanitation. An excellent little handbook has been written for the Order of St. John by Lieutenant-Colonel H. P. G. Elkington, R.A.M.C., and a course of these lectures is allowed to count for the medallions when a man is proficient in first aid. When I tell you that for an army in the field more than 800 men would be required as sanitary orderlies, for sanitary sections and squads, and for water duties with regimental units, you will realize how valuable men trained in these capacities would be. Classes are constantly held at Aldershot for the instruction of the R.A.M.C., but on active service we should be glad of as many additional trained men as possible. This particular branch has been taken up by the St. John Ambulance Brigade at some of their annual camps with great success, and I hope the training may be further extended.

So much for teaching the untrained. Now I should like to say a few words about the desirability of keeping in touch with those who have already been trained and who have passed out of active service.

All over the country there are pensioners and ex-soldiers of the corps — non-commissioned officers, dispensers, stewards, clerks, trained orderlies, and cooks—scattered about, and how little pains are taken to locate them in case of need! Of course, this refers mainly to officers of our own corps, but I have often thought how very little officers in charge of hospitals at home realize what their position would be if war were declared to-morrow and the majority of their trained staff were ordered, as they would be, on active service. I suppose they would promptly sit down and telegraph to the Record Office for pensioners. Yet our own regulations clearly lay down the necessity of keeping a register of men who would be available for employment in an emergency in each command. During the South African war I received many scores, perhaps hundreds, of applications for men trained in different capacities, and was frequently able to telegraph back that a suitable man resided in the very same town from which the demand came.

Now, why were those registers not properly kept? Quite apart from the requirements of war, it would be an advantage if our own medical officers were in touch with their brethren in civil life in the locality, who frequently want dispensers, trained orderlies, etc. We do our best at the Record Office whenever applications are received, but I am convinced that if local registration in all commands were properly carried out, not only would deserving ex-soldiers of the corps find suitable billets, but principal medical officers of districts would have a list of men capable of filling vacancies in their own hospitals should necessity arise.

Leaving what may perhaps be considered minor details, I venture to think that a most valuable reserve might be obtained by expanding the "Home Hospitals Reserve" provided by the St. John Ambulance Brigade and the St. Andrew's Ambulance Corps in Scotland, so as to allow, men of those organizations to serve abroad with the army in the field as well as in the military hospitals at home. At present this reserve consists of a score of officers and 2,300 men of the St. John Ambulance Brigade, and 8 officers and about 70 men of the St. Andrew's Ambulance Corps, and, as I hinted above, I believe a very large number would be willing to serve abroad. Why not have an alternative agreement which every medical officer and man should sign on joining, one for duty in a military hospital at home and one for duty *either* at home or abroad? In both cases officers to have commissions (preferably as captains), and men to be enlisted with their ranks in their own organizations on mobilization for the duration of the war. In fact, to follow the same procedure as is now authorized for the Special Reserve of the Territorial Forces (Category "B").

It may be said that this can be done *after* war is declared, that we shall have plenty of volunteers, that details can be adjusted then, and so on, but I do very urgently maintain that it would be an immense advantage to make all arrangements now, in time of peace, when the matter can be settled on a proper basis. First, because we should know approximately the number both of officers and men on which we could rely, no matter how frequently the individuals varied. In the Special Reserve of the R.A.M.C.(T.), (Category "B") a quarterly return is rendered, and though the individuals can practically withdraw at any time, the total numbers are steadily increasing.

Secondly, the officers and men would know more definitely how they stood, and by signing one or other of the agreements, would realize the exact responsibilities they had undertaken.

Thirdly, which I consider most important, the Orders of St. John and St. Andrew would acquire a definite status as forming an integral portion of the military organization for defence.

I do not think we should undervalue this feeling of sentiment. There is a very strong *esprit de corps* in both organizations, as has been shown by the Order of St. John in raising, with War Office sanction, eight units (bearer companies under former regulations), and keeping them efficient by annual trainings in military hospitals. The *morale* of the men is excellent, and they display a very high degree of intelligence, as I have witnessed myself when attending their annual camps, and as any one who has seen them on duty on public occasions must have observed, and I believe if they could be recognised *now* in times of peace as an essential reserve of the medical service in time of war, not only for the home hospitals, but also (if they volunteer) for duty abroad, it would be a mutual advantage to the State and to the men themselves. The scheme, of course, must be arranged by the responsible authorities, but I think the idea is one in which all members of the profession might take an interest.

In the foregoing remarks I have made no reference to the British Red Cross Society and its voluntary aid detachments. In the most interesting address on the subject which was given by Sir Alfred Keogh in October last, he clearly defined the scope of their operations, namely, to link up the field ambulances of the Territorial Forces with the twenty-three general hospitals. He showed by diagrams and notes how valuable their services would be in this capacity, and I have no doubt the patriotic movement will be widely successful; but the time allotted to our papers in this Section is strictly limited, and I thought it best to confine our attention to the medical requirements of the expeditionary force.

I have tried to show how, in order to make provision for these requirements, every medical practitioner, whether civil or military, may help, each in his own way. All can use their influence to recommend men fully qualified to join the Special Reserve of Officers. Teachers and deans of schools can point out the advantages to students of the Officers' Training Corps. Our own officers might take more interest in the after-careers of our own trained men who leave the colours, by registering their names and recommending them for employment in civil life. Gentlemen too busy in private practice to accept commissions in the Territorial Forces might take up ambulance work and assist in training and keeping efficient some of those subordinates whose services on mobilization would be in such demand.

I would rather lay stress on their being kept efficient, for a man who has once got a certificate in "first aid," or "home nursing," or "sanitation," and who keeps it framed and hung up in his room, is not of much use on active service, whatever he may be in civil life. The Territorial and the Special Reservist must do his training annually. The St. John man must perform at least twelve drills and attendances every year, or he cannot remain in the brigade, and I admit this constant maintaining of efficiency, this "ever climbing up the climbing wave," is a severe tax on teachers and taught.

I sometimes get letters from officers and matrons, saying, "What is the use of our training men when you immediately take them away?" It is so, and it must be so. We are no worse off than the colonel of a regiment who is perpetually training men for the battalion abroad, or the riding master breaking in horses for other men to ride. Let us hope that we are each, according to our capacity, gradually leavening the whole lump and preparing the way for that scheme of universal home service which, when it comes, will find us prepared for any emergency.

DISCUSSION.

Lieutenant-Colonel G. E. TWISS pointed out that in the old form of enrolment in the St. John Ambulance Brigade the candidate was asked, if willing to serve with the army "at home," "abroad," and such questions reintroduced would answer Colonel Wilson's requirements. He then referred to a paragraph in the *Standard* of July 26th, and asked whether that might be taken on authority to mean that if the St. John Ambulance Brigade raised companies of trained and reliable men and women, and offered their services in time of war, their services would not be accepted by Colonel Wilson—that was the only meaning the laity could put to it. The paragraph from the *Standard* was as follows:

> The Army Council has decided that voluntary aid detachments which county associations have been authorized to raise in Great Britain for the purpose of tending sick and wounded in war in the home territory, will, in future, be regarded as a portion of the Technical Reserve, under the terms of Paragraphs 26 to 29 of the Territorial Force Regulations.
>
> It is also notified that no one on the active list of the army will, in accordance was Paragraph 449a of the King's Regulations, take official cognizance of any other body or association which aims at carrying out the work for which the recognized voluntary aid detachments are organized.

Colonel C. H. MILBURN pointed out the necessity for the acceptance of men for service abroad, and service at home, as many instances had occurred in the past where men were not medically fit for service abroad, but were eligible and could serve at home. And, further, that men for water duties should be trained in the R.A.M.C. and detailed for duty with combatant units.

Surgeon-General EVATT said that the pharmaceutical profession should be specially dealt with and a defined status given its members on joining the Territorial army. Some medical men refrained from joining the St. John Ambulance organization because they considered their status within the association defective and not justly recognized by the governing body of the association.

Major CONNELL said there seemed to be a desire on the part of members of the Pharmaceutical Society who were enlisted in general hospitals to obtain commissions. He certainly felt very strongly that it would serve no good purpose to grant such commissions.

Lieutenant-Colonel WILSON, in replying to the discussion, said that he had not seen the Army Order quoted by Lieutenant-Colonel Twiss, but looking at the newspaper cutting it only seemed to say that no one on the *active list* should take official cognizance of any other body or association aiming at doing the same work for which the recognized voluntary aid detachments were organized. It did not appear to interfere with the liberty of any person on retired pay or in civil life connected with ambulance work, teaching or instructing any classes in ambulance or first aid duties. He thought that the system of having two sets of companies in the St. John Ambulance Brigade, one being the company of the brigade in a district and one being a "county company," might lead to duplication, but of course it was a matter for the authorities at St. John's Gate to deal with. Replying to Colonel Milburn, he said that perhaps he had not made himself quite understood about the men of the St. John Ambulance Brigade who served at home during the South African war. Such men had been gladly welcomed, and a separate form of agree ment was specially drafted for them, but it was a fact that very few volunteered for this duty, the great majority preferring to go on active service. In reply to Surgeon-General Evatt, Major Connell, and others, regarding the position of qualified pharmacists in military hospitals, he said that it was a fact that dispensers were enlisted into the army during the South African war as privates, and subsequently given promotion. It must be remembered that one had to look at the requirements of a military hospital in time of war more than the wishes of individuals; and it was really useless for administration and an inconvenience to officers in charge to have non-commissioned officers who were not able to do the duties of non-commissioned officers. On active service there must always be a shortage of trained non-commissioned officers, and it could only be a disappointment to officers commanding medical units to have men sent them with badges of rank on their arms given solely for position, who were necessarily unable for lack of training to perform the ordinary duties of such rank. This applied with even more force to the position of warrant officers. Dispensers could join the St. John Ambulance Brigade as supernumeraries and enter the Home Hospitals Reserve; or, enlisting into the Territorial Forces R.A.M.C., could qualify for promotion. They could join Category B of the Special Reserve, and then on mobilization they would be employed in the field with their rank in the Territorial Forces. A knowledge of medical returns and administration in connexion with dispensing was all that was required, and this examination had been passed by several qualified pharmacists in the R.A.M.C.(T.). He thought that men joining the Territorial Forces for water duties should belong to the R.A.M.C., and not be enlisted into other branches of the army. It was no use a man joining the Garrison Artillery or Infantry solely for duties in connexion with water purification and sanitation. It seemed to be better for him to join the R.A.M.C.(T.), preferably a sanitary company, and then on mobilization (or in camp) to be detailed for duty with a unit—to follow, in fact, the same lines as those adopted in the R.A.M.C. Regular Forces. In conclusion, he pointed out that the paper had been written mainly with a view to making suggestions regarding the provision of medical personnel for an army in the field, and he had only referred incidentally to the R.A.M.C.(T.) and voluntary aid detachments, which were really intended for home defence.

TESTS FOR COLOUR VISION.

By Fleet Surgeon W. W. PRYN, R.N.

FOR many years the Admiralty has aimed at a very high standard of physical fitness in executive officers. So long ago as February 23rd, 1857, in order to be successful a candidate had to be free from defect of vision. In 1868 the requirement was "perfect vision in each eye," and in 1879 the regulations provided for the testing of colour vision by means of ribbon flags. In 1887 "imperfect perception of colours" appeared in the long list of physical disabilities, and in the same year the use of wools was authorized as a test for colour perception.

The importance of the subject can scarcely be overrated. If a candidate be entered with organic heart disease he will probably be invalided in a few years, and the cost of his training becomes a loss to the State; but should the subject of colour blindness be accepted, he may at any time be the cause of the loss of a battleship and seven or eight hundred officers and men.

For some twenty years Buxton's marine telechrome has been used for colour-vision testing at the Medical Department. This apparatus consists essentially of a lantern containing an Argand burner with regulator for gas supply, the light being only permitted to escape through a small tube. In front of this tube is a metal disc perforated near its periphery at six equidistant points. The perforations are filled with coloured glasses—yellow, blue, pale green, signal green, rose, and red—one of which can be placed in front of the light tube at a time by the disc being rotated. In front of the colour disc is a segment of metal with two perforations in it, either of which can be placed before the colours. The larger perforation represents, when seen at a distance of six metres, the perspective of a ship's lantern at a hundred yards, the smaller the perspective of the same lantern as it would appear at two thousand yards. The telechrome is provided with a screen containing a piece of ground glass, which when moved into position covers the test colours, and imparts to them the appearance of being seen through a fog.

At the Admiralty the telechrome is placed on a bracket with black side shutters, so that it is shaded but is not in darkness. The test at present is applied as follows: The candidate, at a distance of 6 metres from the lamp, is shown the coloured lights in succession through the larger aperture, is required to name them, and to match them from a selection of Holmgren's wools. The illumination is varied occasionally and the fog glass used.

The most recent directions as to use issued with the instrument are as follows:

The telechrome is to be placed in the dark at a distance of 6 metres from the person whose sight is being tested and on a level with his eyes. The candidate is to sit in good daylight, having in front of him a table with a white cover on which is placed a set of Holmgren's wools. The operator is to set the small aperture of the metal segment before the test colour; and may begin with pale green or rose, passing on to the other colours in turn, and changing the amount of illumination now and then. The candidate is required to select from the set of Holmgren's wools all the skeins which resemble the test colour shown, irrespective of shade (of colour).

In testing railway men and sailors it is advisable to use the large aperture (after having gone through the test with the smaller one), and to place the fogging glass *in situ*. One eye at a time should be tested.

As a rule candidates name the coloured lights and match them with the wools without the least difficulty; but when lights are misnamed or the wrong skein is selected as a match, the wool test is applied, and Holmgren's directions closely followed.

In a set of wools three skeins are labelled thus: I, a pale pure green; IIA, a pink; and IIB, a red. The wools are laid out on a white cloth in broad daylight.

Test 1.—The pale green (Skein I) is placed on another white cloth at a short distance, and without any colour being named the candidate is requested to select from the heap of wools all skeins of the same colour as the specimen, some lighter and some darker. He is asked to place them on the same cloth as the test skein, but at a short distance from it, and is particularly cautioned that all skeins selected must be of the same *colour* as the test skein. The candidate proceeds until he has selected all the pure greens, or until he has chosen some of the confusion colours. In the latter case he is reported to be unfit on account of imperfect perception of colours.

Test 2.—The pink (Skein IIA) is next presented, and the test proceeds as before. If in addition to pink skeins any green or grey are selected by the candidate, he is said to be green-blind; if, on the other hand, he select either blue or violet skeins with pinks, he is said to be red-blind.

Test 3.—The red skein IIB is presented to candidates who fail with the pink, as a confirmatory test. The red-blind is apt to choose, besides red, green and shades of brown which to the normal sense seem darker than red; the green-blind on the other hand shades of these colours which appear lighter than red.

According to Holmgren, the common forms of imperfect perception of colours are: (1) A feeble chromatic sense; (2) incomplete colour blindness; (3) complete red-blindness; (4) complete green-blindness.

In (1), although no wrong skeins are finally selected in the first test, the candidate has evinced a manifest desire to pick out one or more of the confusion colours, for example, by taking such in the hand and looking at them intently or placing them alongside the test skein and then withdrawing them.

In (2) the examinee has actually broken down in the first test and selected wrong skeins, but has been correct in the second test.

In (3) the candidate in the second test has selected colours characteristic of red-blindness, and in (4) he has selected colours characteristic of green-blindness.

Failure with the lamp is almost invariably followed by failure with the wools, but the sum of his performance is taken into account in estimating the candidate's fitness or otherwise for the service

Between January 1st, 1908, and May 21st, 1910, 1,389 candidates for commissions in the Royal Navy were examined at the Admiralty, and 25 or 1·8 per cent. were rejected on account of imperfect perception of colours.

The early tests of the Board of Trade consisted of (1) a daylight test and (2) a lantern test in a dark room.

In (1) the examination was conducted by means of a pack of forty coloured cards, in which there were eight colours and five cards of each colour. The candidate was required to name the colour of each card as it was taken from the pack, to select all the cards of a named colour, or colours, and to sort them from the shuffled pack into eight heaps, each heap consisting of cards of the same colour.

In (2) a slide containing ground glass was used in combination with each of nine coloured slides, the examinee being required to name the colours at a distance of 15 ft. The only reasons for which a candidate was allowed to be reported as having failed were inability to distinguish red from green, or either from black by daylight, and red from green, or either from the ground glass by artificial light.

On March 20th, 1890, the Council of the Royal Society appointed a Committee on Colour Vision, and the report was presented to both Houses of Parliament in June, 1892. Among the recommendations were the following:

4. That the test for colour vision should be that of Holmgren. If the test be satisfactorily passed, it should be followed by the candidate being required to name without hesitation the colours which are employed as signals or lights and also white light.

6. That a candidate rejected for any of the specified employments should have a right of appeal to an expert approved by the central authority, whose decision should be final.

12. That in cases of judicial inquiries as to collisions or accidents witnesses giving evidence as to the nature or position of coloured signals or lights should be themselves tested for colour and form vision.

This last recommendation is regarded as being very important, and might with advantage be extended to all in any way responsible for accident, irrespective of the fact of their being witnesses. On Recommendations 4 and 6 the Board of Trade has based its existing practice as to tests for colour vision.

The examinations are conducted at different ports in Great Britain and Ireland, either by examiners appointed by the local Marine Boards to examine candidates for certificates of competency, or by the local superintendents of the Board of Trade, or in certain places by the nautical surveyors. These examiners are only allowed to act after they have themselves been passed in colour vision by the Board's special adviser on the subject, and they are instructed how to carry out the test by the Principal Examiner of Masters and Mates. In the event of failure a candidate may appeal, and the Board's practice is always to allow a special examination.

Until October, 1909, the local examination consisted of Holmgren's test pure and simple, but since this date two further test skeins have been employed—namely, purple and yellow. With it is combined a colour ignorance test, the candidate being required to name the colour of red and green skeins of wool and of white objects. All cases of failure are reported to the Principal Examiner of Masters and Mates on a form to which are attached samples of the skeins incorrectly selected by the candidate.

The special examination on appeal is held at South Kensington. It consists of two parts: (1) an examination with the wools; and (2) a spectroscopic test in a dark room.

The Board's regulations relating to the examination of masters and mates in the mercantile marine give very full and explicit directions as to the manner in which the wool test should be conducted.

The subject of colour vision has lately been receiving the attention of the Director-General, and with a view to the adoption of an efficient test for general use in the navy Dr. Edridge-Green's latest pattern colour perception lantern has been on trial. The apparatus consists of four discs, three carrying seven coloured glasses, and one carrying seven modifying glasses, each disc having also a clear aperture.

The other mechanical details are: an electric lamp with projecting accessories, a diaphragm for diminishing the size of the light projected, handles for moving the disc, and the indicator showing the colour or modifier in use. The diaphragm is graduated in respect of three apertures to represent a 5½ in. railway signal bull's eye at 600, 800 and 1,000 yards respectively when the test is made at 20 feet. The front disc contains the following: clear, ground glass, ribbed glass, neutral 1, neutral 2, neutral 3, neutral 4, and neutral 5; while each of the three remaining discs contains the colours: clear, yellow, pure green, standard green, blue, purple, red 1, and red 2.

The examination is conducted in a darkened room, the candidate, at a distance of 15 to 20 ft. from the lantern, being required to name the colour of the light produced by coloured glasses alone, or in combination either with the modifying glasses or the coloured glasses. The neutral glasses represent fog, the ground glass mist, and the ribbed glass rain.

As already mentioned, it has been the custom at the Admiralty to use a lamp, the candidate being required to name the colour of the light as well as to match it with a skein of wool. The method is rapid, satisfactory, and convincing. On different occasions when parents have appealed against the report that a cadet candidate is unfit on account of imperfect perception of colours, a re-examination has been allowed in the father's presence, and in no case has there been any difficulty in demonstrating the defect, and satisfying the parent as to the necessity for rejection.

A lamp should be in darkness, while the wools should be in broad daylight. It is proposed to meet these requirements at the Admiralty new buildings by screening off one corner of the examination room by means of heavy dark curtains extending from ceiling to floor, and arranging for the candidate to stand at a table near a window 6 metres from the lamp. Buxton's telechrome has but six colours, and a piece of ground glass to give the appearance of fog. It has also been said that a better selection of colours might have been made. There is little doubt, however, but that when a candidate has named the colours correctly, and matched them without hesitation, he has given good evidence of fitness for entry as regards colour vision.

The Edridge-Green lamp places at one's disposal a much larger number of possible combinations. The combination red 1 with neutral 4 has been found useful in detecting a defective sensibility to red, the examinee having to approach the lantern to half the usual distance before the red light has been discerned. The use of the same coloured glass in duplicate or triplicate will often disclose the defect; thus, a candidate who named the light from one yellow glass correctly declared it to be red in each case when two and three yellow glasses were in use. In other cases it has been found that the subject of imperfect perception of colours has named the yellow light "red" when it has followed a green, and "green" when it has followed a red. The modifying glasses when combined with the colours have also been found easily to place the colour blind in difficulties.

With this lantern, on account of the larger number of possible combinations, it is less necessary to require matching with wools. Still the practice is regarded as useful. When a person has difficulty in giving the colour a name, he should be asked to match. If his colour vision be normal he will do so without hesitation, and will then often name the colour correctly; while if the colour perception be at fault he will probably disclose the defect by selecting a wrong skein. Also, on account of the number of possible combinations, the Edridge-Green lantern has an advantage over the telechrome. In one case an examinee named the yellow of each lamp at different times both green and red. With the telechrome he had no difficulty with the other five colours, and in a short time he named the yellow light correctly, simply from his knowledge that it was not one of the others. In the event of his becoming a candidate and knowing that he would be examined with the telechrome, it would be quite an easy matter for him to educate himself so as to pass on the lights alone, but if he were required to select all the wools of the colours shown according to directions, and were not successful, he would be refused practically on the Holmgren test.

With the Edridge-Green lamp it was different. This person, after a prolonged examination, still misnamed the yellow and clear lights when combined with the modifying glasses. The glass labelled "blue" is not a typical blue, and when two or three "blues" are combined a violet is the result. A typical blue is, however, obtained by combining blue and standard green, and if an examinee can distinguish any difference in colour between this combination and that of purple and standard green he gives evidence of being heptachromic, of ability to see the seventh colour—indigo—in the spectrum.

It must not be supposed that the labels apply in all circumstances; thus, both blue and purple with the stronger neutrals show pink, and one must exercise his own colour perception in employing the test. It is, therefore, essential that the examiner in this and all other tests should himself have normal colour vision, and with a view to the settling of this point it would be advantageous for all who are engaged extensively in testing colour vision to be subjected to an examination with the spectroscope.

Some very hard things have been said of Holmgren's test; it having been maintained that it allows some candidates to be passed who ought to be rejected and others rejected who ought to be passed. Used as a check on the lamp test, as has been the custom of the Admiralty, the Holmgren test has been found very useful. A candidate who has failed with the lamp almost invariably breaks down with the wools, when the test is carried out strictly in accordance with Holmgren's directions.

When applied to the subject of incomplete colour blindness the test as compared with the lamp is certainly not so convincing to an onlooker. In the last-mentioned case the examinee failed; yet although there was abundant evidence of a feeble chromatic sense there was finally only one confusion colour selected in Test I, and had this been an appeal case there would probably have been great difficulty in convincing the parent that the candidate was unfit on account of imperfect perception of colours. With either lamp on his naming the yellow light at different times both red and green there would probably have been no difficulty whatever.

In more pronounced cases of colour blindness the examinee frequently breaks down at once and selects several confusion colours before any of the correct skeins.

It has often been said that colour-blind persons will pass Holmgren's test. This, however, is not my experience. On the morning of Easter Monday, by permission of the Master of Dulwich College, 102 boys were examined with the Edridge-Green lantern, and four of them were found to be colour-blind. One of the masters, who knew that he had difficulty with colours, requested to be examined with the lamp, and he failed badly. In the afternoon these five were examined by means of Holmgren's test, and all failed.

A visitor who was examining in mathematics informed me that he was somewhat colour blind, and that his difficulty consisted in seeing red unless it were bright and at a comparatively short distance. With the lamp colours were misnamed, and the examinee could only see the red of the combination red 1 and neutral 4 at half the usual distance. This gentleman knew that Holmgren's test put him in a difficulty.

The Board of Trade has recently obtained through the Foreign Office reports upon the colour-vision tests in use in the principal maritime countries of the world for their merchant services. It appears that of these Greece and Italy alone have no colour-vision test, while the Holmgren wool test, either alone or as an alternative or supplement to other tests, is used in the United Kingdom, Austria, France, Germany, the Netherlands, Norway, Russia, Sweden, and the United States. Japan also employs a wool test, though not apparently one based on Holmgren's principles.

Conclusions may be summed up as follows:

1. An examiner should himself have normal colour vision.
2. Colour vision as required for sea service is best tested by means of a lamp.
3. Of lamps which have been used the Edridge-Green is the best form.
4. The practice of requiring the coloured lights to be matched with wools is to be recommended.
5. The Holmgren test is useful as an auxiliary.

DISCUSSION.

Dr. F. W. EDRIDGE-GREEN said that he must pay this tribute to the Admiralty, that he had examined many men rejected by them and never found one who was normal sighted, though he had examined very many normal sighted persons rejected elsewhere, by the Holmgren test. Holmgren's test was very defective, as in addition to rejecting a very large number of normal sighted persons (on some estimates over 50 per cent. of the total rejected) it allowed cases of the colour-blind to pass.

Fleet Surgeon PRYN, in reply, said he did not maintain that Holmgren's test was a good one, but as an auxiliary he had found it useful. If he had examined candidates by the Holmgren test alone he would probably have had the same results as others, but in his experience candidates

who failed with Buxton's lamp almost always showed with Holmgren's test at least a feeble chromatic sense, and before a candidate was rejected he liked him to convict himself by deed as well as by word. He considered that a candidate who was colour ignorant should be rejected, as if a look-out man reported a red light green, or vice versa, he would be positively dangerous. He might be admitted when he had become educated in colours. Contrast phenomena were not considered to interfere with the lamp test. They were exaggerated in the colour blind and would thus cause their rejection, but candidates with normal colour vision would not be rejected. It was comforting to be told by an authority that examining officers had not been known to reject a candidate who ought to have been passed. An assurance that no candidate had been passed who ought to have been rejected would be welcome.

ISOLATION OF DISEASE CARRIERS, AND METHODS OF DEALING WITH THEM.

By Major S. L. Cummins, R.A.M.C.

In this paper the subject of typhoid carriers only will be dealt with, and I cannot do better than begin it by a classification.

Persons who pass typhoid bacilli in their excreta may be classified as follows:

1. *Precocious Carriers.*—Persons in the incubation period, who are harbouring germs, but have not yet developed the disease.
2. *Paradoxical Carriers.*—Persons who have contracted typhoid bacilli without any resultant illness, and who continue to pass them in the excreta.
3. *Typhoid Cases.*—(*a*) Recognized, (*b*) unrecognized, (*c*) convalescent.
4. *Chronic Carriers.*—Persons who, subsequent to a recognized or unrecognized attack, or even after contact with cases, continue to pass typhoid bacilli either constantly or intermittently in the excreta.

The above classification is founded on that of Sacquépée. Of the groups included in it, the chronic carrier will tend to initiate outbreaks of typhoid fever, while the other groups arising during the outbreak will tend to spread it by furnishing fresh foci of the disease.

It has been calculated that about 3 per cent. of all typhoid convalescents ultimately become chronic carriers, so a step of the greatest importance in discovering carriers is the periodical examination of the excreta of persons who have recovered from the disease. But the search for chronic carriers will most frequently be made in the attempt to discover the origin of an otherwise inexplicable outbreak.

Let us take an imaginary epidemic and consider the steps likely to be most profitable in our search. We will suppose that, in a certain regiment, cases continue to occur from time to time, although all the usual sources of infection, such as water and food supply, have been proved above suspicion, and the accommodation of the troops is satisfactory in every respect. We suspect that the cases are due to a "carrier," and it becomes our business to search for him. We must begin by limiting our field of inquiry, taking the most important groups first. Guided by the distribution of cases in barracks, we commence with all persons associated with the preparation and issue of food.

Our first step, after consideration of their medical history sheets, will be the application of "Widal's" reaction to all these men; and this brings me to discuss the value of this test as applied to the discovery of typhoid carriers. As is to be expected in persons who have had typhoid, carriers usually, but not quite invariably, give a positive response, but seldom in high dilutions. Dr. Alice Hamilton, in a series of typhoid and paratyphoid carriers examined by her, records positive "Widals," in dilutions of 1 in 50 and upwards, in 75 per cent.; but it was high in none. Captain Crawford Kennedy, R.A.M.C., found the test to be positive in seven cases, but not in high dilutions, while it was incomplete in two of them so low as 1 in 20. It will be seen, then, that although in the diagnosis of typhoid fever agglutination of typhoid bacilli by the serum, in low dilutions, is thought little of, in the search for the chronic carrier such an incomplete reaction has a definite value. The test, however, proves nothing except that those responding to it require further attention.

We now pass to the most important test for the diagnosis of the carrier—the examination of the excreta. A positive result is here final proof that the person concerned is a carrier; but, unhappily, a *negative* one does not exclude his being so, since the excretion of bacilli is often intermittent. Before a person is declared free from typhoid bacilli on these negative grounds the examination will have to be repeated many times.

We return to our imaginary epidemic. Two of the cooks prove to agglutinate typhoid bacilli in low dilutions. The first few attempts to isolate typhoid from the excreta have proved negative, and time is being lost. Is there no means of rapidly deciding whether any of these men are really "carriers" or not? Gaetgens has called attention to the value of the opsonic index in the discovery of carriers. He has proved that while after an attack of typhoid fever the opsonic index falls to normal in a few months, it remains persistently high in those persons who continue to harbour typhoid bacilli. In a series of observations published by him it was raised in every case. Dr. Ledingham, Dr. Alice Hamilton, Captain Crawford Kennedy, and others have also reported raised opsonic indices in typhoid carriers. In fact, there is reason to think that the opsonic index is practically always abnormally high in these persons. Although inapplicable to large numbers, the test furnishes just the information that we require in our predicament, as we find that one of our men has a high opsonic index. We conclude, then, that he is in all probability the man we are seeking, and, indeed, during the daily observations of excreta that follow he is found to be intermittently excreting bacilli.

We have now found the probable *origin* of our outbreak, and by isolating this man we are able to shut the stable door after the horse has escaped. For, indeed, cases continue to occur. Let us consider why. The incubation period of typhoid fever is from seven to forty-five days, and, as cases have been occurring at short intervals, there may be several "precocious carriers" at large. There may also be ambulatory and unrecognized cases still passing typhoid bacilli.

In the search for these men we have a fresh problem to consider. We must widen our field of inquiry, and yet our bacteriological staff is already overworked. We can do so by systematic and thorough medical inspection, bearing in mind that the typhoid bacillus can cause symptoms very different from those clinically familiar as characteristic of typhoid fever. To those interested in the question of these abortive cases of typhoid infection I would recommend an interesting account of an epidemic in the French army that recently occurred at Saint Briene. It is described in the *Archives de Médecins et de Pharmacie Militaire* for April, 1910. The methods adopted by the French medical authorities were excellent on that occasion, and we may well apply them to our epidemic.

Our object now is to catch and isolate the early and atypical cases by means of medical inspection. We are agreed that a walk down the ranks with a glance at the wrists—that persistent relic of the itchy era of the British army—will not help us much. Let us take a leaf from the book of our French *confrères* and proceed as follows: The men will parade in their barrack rooms, and, as each is reached by the medical officer, he will loosen his clothes so as to display the thorax and abdomen, lie down on his bed, and undergo a rapid but thorough examination, directed to the discovery of slight splenic enlargement, rose spots, gastric, hepatic, or intestinal symptoms, signs of bronchitis or pleurisy, furred tongue, redness or ulceration of tonsils or pharynx, etc. Inquiries will be made as to general fitness, diarrhoea, constipation, headache, and so forth; and the temperature will be recorded.

In the French epidemic quoted, 57 cases were discovered in this way, of whom only 19 required to be sent to hospital. The others, although proved bacteriologically to be of a typhoidal nature, were merely isolated, but not regarded as in need of hospital treatment. This will give some idea of the importance of a thorough inspection, as well as of the number of typhoid infections that never reach the dignity of an attack of typhoid fever. Their importance from the epidemiological point of view, however, is very great, as they tend to escape recognition.

Having carried out our inspection—which, by the way, must be repeated as frequently as the strength of our staff will permit—and thus isolated some suspicious cases, we

must again call upon the bacteriologist to elucidate these; and his assistance will be also required to deal with all contacts in the immediate vicinity of cases. His efforts will be directed to proving or excluding typhoid infection in our suspects, and to the recognition of early cases or precocious carriers amongst the contacts. For the first, the "Widal" reaction will be of the greatest use, and the examination of the excreta will also help. In nearly all the 57 cases above mentioned as isolated by inspection during the French epidemic a positive "Widal" was obtained, and in several the typhoid bacillus was isolated from the excreta. But as we are examining early cases we may expect great assistance from blood culture, especially in the very cases where "Widal" is still negative. This process, first perfected by Conradi, has now been so far simplified as to be an excellent and easily applied as well as a certain, test for early typhoid infection.

By means of these several procedures—medical inspection, "Widal," culture from the stools and culture from the blood—we finally succeed in eliminating infective foci from our regiment and bring the epidemic to an end. But we have now on our hands the original chronic carriers, as well as several temporary ones. What are we going to do with them? Let us first consider to what extent and in what way they are dangerous. That they are capable of originating outbreaks has been proved in many recorded instances, and needs no further demonstration. The extent to which they are dangerous, however, gives more room for discussion. This danger is apparently greater from the temporary than from the chronic carrier. I quote the following from Dr. Klinger's Report on the Antityphoid Campaign in Germany: "Finally, 103 old cases and 296 bacillus carriers were discovered by the Commission in 1906 and 1907. The old cases were simply discovered by the fact that they were causing new infections. . . . How important it is to discover early a possible source of infection is shown by the fact that, of the 1,397 cases whose origin was more or less determined, 137 were derived from the old cases . . . 47 from hidden carriers, and 912 from sick, who at the time of causing the infection, had not yet been brought under supervision."

In fact, under European conditions, the chronic carrier is not a very great direct menace to the health of his neighbours. But all regular soldiers are liable to serve abroad, and a moment's consideration will show that the potential danger of a "carrier" is multiplied a thousand fold under military conditions in warm climates. In Europe, under peace conditions, the disposal of excreta is likely to be thorough. Flies, now proved by Major Faichnie and others to be active agents in the spread of typhoid bacilli from infected faeces, are relatively few. Above all, the average health of the soldier is good. He is under his natural conditions of climate, and in the best position to withstand infection if it comes his way.

Abroad, all this is changed. The disposal of excreta is often imperfect, flies abound, and the soldier is under new and unfamiliar conditions of life. Diet, climate, perhaps the exertion of active service, all tend to lower his health and diminish his resistance, while at the same time, the paths of dissemination of typhoid bacilli from the ever-present carrier are greatly increased in number. I repeat that the danger from carriers, small under European conditions, is urgent in the tropics. How, then, shall we deal with our carriers? We do not yet know how to cure them, so that door is closed to us. It is not enough to give them careful instructious as to what precautions they must take. Klinger mentions that "Chronic carriers who had been told to take precautions, caused seventy-eight infections." There is only one course open to us. We must get rid of them. They are a source of but little danger to the civil population, but, in the army, under conditions of active service or tropical climate, they are likely to be very dangerous indeed. Our only course is what is now being done in the army. Keep the men under observation for some months. If the excretion of bacilli is persistent, discharge them from the service, notifying their respective medical officers of health as to their condition. But with all our precautions, we must realize that we shall always have typhoid carriers in the army; and this fact must be taken into account.

The best prophylaxis against the production of typhoid carriers is the prevention of typhoid fever, and this is best accomplished by sound general measures of garrison hygiene, and by diminishing the susceptibility of individuals and communities by antityphoid inoculation. It should be remembered that for every 100 cases of typhoid prevented, we have eliminated, say, 3 chronic and 97 temporary carriers, with their geometrically increasing potentiality of producing disease.

DISCUSSION.

Dr. JOHN BROWN (M.O.H. Bacup) said that in civil practice they knew very little of the typhoid carrier, in fact the danger was so slight that they ran little chance of spreading the disease in that way. What experience had Major Cummins of the value of urotropine in regard to destroying the typhoid bacillus in the urine? In disease of urine due to pathogenic bacilli it was very effective. The danger of typhoid carriers in the army might be of importance, but it was not so in civil practice.

Fleet Surgeon BASSETT-SMITH said the early diagnosis of typhoid carriers by high opsonic index and agglutination reaction was very important, but only the latter was practical in general use. Typhoid carriers in the navy were of little danger in ships, as the method of disposal of excreta in men of war was very effective; on shore all general dangers were present, but in temperate climates with water carriage as in dockyards the risk was little, though much increased by being abroad. Cases of faecal infection were most common. In cases in the services the men were under observation and were safer in service than outside.

Major CUMMINS, in reply, said that Dr. Brown had asked whether urotropine was curative in the cases. In his experience urotropine, though useful in diminishing the number of bacteria excreted, was not in any sense curative. He pointed out that his paper only dealt with garrison conditions. He considered that the only hope was to anticipate active service by getting rid of carriers as they arose in peace conditions, but of course that would only be a partial measure at best. Fleet Surgeon Bassett-Smith's question—whether the cases with low agglutinins had high opsonins—must be answered in the affirmative. Both the cases had a raised opsonic index co-existing with low agglutinins.

NAVAL RECRUITS.

By Fleet Surgeon G. T. COLLINGWOOD.

THIS paper, which refers to the physical and medical examination of recruits at the Royal Navy Rendezvous, London, during two periods—1st April to 31st March, 1907 to 1908, and 1908 to 1909—was sent into office at the end of my time there, and was not originally intended for publication. Still I think that the percentage tables of fit and unfit, causes of rejection, and some common causes of rejection, may be found of interest even if not of much value:—

Total examined, 1907-08	...	6,810
Medically fit	...	3,393 (49.82 per cent.)
Medically unfit	...	3,417 (50.18 per cent.)
Total examined, 1908-09	...	5,955
Medically fit	...	2,863 (48.08 per cent.)
Medically unfit	...	3,092 (51.92 per cent.)

Of those medically fit a fair percentage were subsequently rejected for character and education.

Table I gives the causes of rejection during these two periods arranged in classes according to the different causes of rejection and as nearly as possible in the order the rejection defects were noted, and the would-be recruits were sent away. This is a matter of importance as regards percentages, and after a few weeks' recruiting the conclusion was arrived at that if the figures obtained were to be of any value a definite order of examination must be strictly adhered to, and so this was carried out.

Thus, for example, on Table I, year 1908 9,483 were at the start rejected for defective teeth, and sent away out of the 5,955 examined, giving 8.11 per cent. rejected. The list also shows 632 rejected for defective vision, not, of course, out of 5,955, but 5,955 – 504, namely, those who had been rejected and sent away for defective teeth, deviation of septum, and enlarged tonsils, thus giving 632 rejected for defective vision out of 5,451 who were examined for this defect, namely 11.59 per cent, and so on all the way

down the lists. If not arrived at in some such way the resulting percentages would be incorrect and misleading. To attempt to arrive at the conclusion how many out of the 483 rejected for defective teeth would have been rejected for eyesight or one or more of the several other causes of rejection, would only interfere with the obtaining of efficient recruits, and would be almost impossible to work out. Of course if the percentages were worked out from only a small number examined the result might be misleading, but when done from the examination of some thousands of candidates may be of some value.

TABLE I.—*Causes of Rejection, arranged as nearly as possible in the Order the Rejection Defects were Noted.*

Causes of Rejection in Classes.	1907-8.	1908-9.
Defective teeth	548	483
Disease of nose	3	2
Enlarged tonsils	8	19
Defective vision	725	632
Strabismus	6	2
Ophthalmia	3	7
Defective colour vision	93	—
Defective speech	31	26
Disease of ear and deafness	249	228
Fits	0	4
Wry-neck	0	1
Disease of skin	27	26
Old injuries	78	99
Old operations	87	85
Incontinence of urine	4	2
Contracted and webbed fingers	3	2
Contracted and deformed toes	155	111
Other deformities	27	38
Varicose veins	67	74
Knock-knee	252	233
Bow-legs	16	11
Flat-foot	84	181
Corns and bunions	30	19
Spinal curvature	71	64
Haemorrhoids	3	2
Enlarged glands	8	0
Hypospadias	2	6
Retained testicle	24	18
Disease of testicle	2	0
Hydrocele	7	11
Varicocele	48	79
Venereal disease	8	10
Hernia	42	43
Laxity of abdominal rings	52	39
Umbilical hernia	4	0
Disease of heart	450	303
Catarrh	4	0
Under height	70	30
Under chest	118	102
Poor physique	7	6
Obesity	1	3
Defective colour vision	—	86
Total rejected	3,417	3,092
Fit	3,393	2,863
Total examined	6,810	5,955

Order of examination for coloured vision altered during second year.

Table II gives percentages of a few of the most common causes of rejection worked out on the principle mentioned above.

TABLE II.

	1907-8.	1908-9.
1. Defective vision	11.59	11.59
2. Heart disease	11 13	8.90
3. Defective teeth	8 04	8.11
4. Knock-knee	5 36	5.78
5. Deafness and disease of ears	4 61	4.76
6. Under chest	3 35	3.52
7. Deformed toes	3.13	2.55
8. Hernia and laxity of rings	2.27	2 36
9. Flat-foot	1.89	4.68
10. Varicocele	1.14	2.21

Not too much notice was taken of varicoceles, especially in boys, if otherwise robust, as it was regarded as more or less physiological and likely to disappear, or give rise to little or no trouble later.

It is interesting to note how nearly the above causes of rejection for the two years correspond. It may appear that the number rejected for heart trouble was rather high, but at the Royal Navy Rendezvous, London, marked rapidity of pulse remaining after due rest, or irregularity after exertion, were sufficient to cause rejection. At times there may be a hurry in getting ratings, especially stokers, and a more lenient view may be taken of such defects, etc. This, however, should seldom happen, and as the numbers required are generally easily obtained, it is not necessary for the examining officer to take any such risks.

Table III compares the results of naval recruiting at the Royal Navy Rendezvous, London, with that of a few other places, and also at the Rendezvous in 1876. It will be noticed that, as a rule, the percentages vary but little.

TABLE III.

Place.	Examined.	Fit.	Percentage.
R.N. Rendezvous, London	6,810	3,393	49 8
H.M.S. *President*, London	1,293	560	43.3
H.M.S. *Pioneer*, New Zealand	106	52	49.0
Australian Naval Force	197	97	49.2
H.M S. *Emerald*, Queenstown	257	129	50.2
R.N. Rendezvous, 1876 - Marines	1,086	605	55.7
R.N. Rendezvous, 1876 - Men	50	32	54.2
R.N. Rendezvous, 1876 - Boys	2,022	975	48.2

It may be noted that the standard for boys in 1907 was higher than in 1876, and as on both occasions the numbers required were obtained, I think this may be taken as anything but a sign of the physical degeneration of the race in this respect.

1907: Age, 16 to 16½; height, ft. 2½ in.; chest, 33 in. mean.

1876: Age, 16 to 16½; height, 5 ft. 1 in.; chest, 30 in.

It is doubtful, from these facts and figures, if any satisfactory inferences or deductions can be made as regards the national physique or physical degeneration of the race, for the examining medical officer works under Admiralty regulations, and certain standards of height, chest, etc., are advertised, and vary from time to time according to requirements. Also, that the would-be recruit does not necessarily represent the ordinary type of the race, and though about 50 per cent. are rejected medically as unsuited for the navy, it does not follow that they are physical wrecks or degenerates; on the other

hand, in many instances candidates, knowing themselves to be below the requirements in physique, etc., go away, and do not come up for medical examination. It seems, I think, probable that due attention to the teeth, etc., and the training of the children in our schools may lead to a diminishing number of rejections from this and other causes.

As far as I know, little has been written on naval recruiting and the causes of rejection, so I trust my paper has been found of some interest.

DISCUSSION.

Lieutenant-Colonel Simpson said many cases of disordered action of the heart were in fact of a neurasthenic type (a constitutional condition) associated with high blood pressure—purple hands and a rapid capillary reflux. Treatment was difficult; electric baths on the one hand produced a temporary improvement, and cold sponging as a general nervous tonic was also effective. The condition did not seriously interfere with their work.

Lieutenant-Colonel Glenn Allen said he was interested in the subject, having been connected with recruiting for the army in the London district during the last two years. He desired first of all to state that his experience as regards the cause of disordered action of the heart in the case of recruits made him support the view just advanced by Lieutenant-Colonel Simpson. It was by regulation necessary to record the pulse-rate in every recruit for the army. Every man whose pulse-rate reached or exceeded 112 per minute and was maintained at that rate during the examination was rejected. The cause usually ascribed for that form of functional heart disorder was cigarette smoking. His recruiting experience had led him to doubt whether the majority of cases were due to that cause. He had made a practice of inquiring into the smoking habits of all such recruits, and examined the fingers for nicotine staining. The result had not been to support the view that nicotine poisoning was at the root of the mischief. He was inclined to think that it was principally a matter of temperament. Whether such subjects of nervous excitability of the cardiac muscle under medical examination would not make efficient soldiers was open perhaps to question. As things were at present they were rejected so long as they were subject to that form of palpitation. One other point he should like to draw attention to was the large number of rejections for the navy as compared with the army. The figures given by Fleet Surgeon Collingwood showed rejections exceeding 50 per cent. Speaking generally, without having exact figures beside him, the rejections for the army and special reserve combined amounted to about 33 per cent. in the London district. Why that should be perhaps Fleet Surgeon Collingwood might be able to explain. Apparently all naval recruits had to pass a colour vision test, which was not required in the case of army recruits. That, however, did not explain the large difference in the figures. There must be some difference in the physical standard demanded or in the quality of the recruits seeking admission.

Fleet Surgeon Pryn said for public service he thought it wise to aim at the normal. Independently of requirements for sea service he thought it useful to examine candidates for colour vision. He had had considerable experience of examining boys, and had found that defects were very frequently multiple. Because a defect was not discoverable it did not follow that it did not exist. Given two boys equal in all respects except that one was colour blind, assuming that at some future period one should prove himself to be wanting in ordinary courage in the presence of the enemy he would expect him to be the colour blind. With regard to the question of smoking and heart trouble, he thought that a candidate who abstained from smoking for three months would very likely pass, but at the same time he would very likely be undesirable, as he would probably smoke after entry and suffer again. There again it was desirable to aim at the normal.

AIR AND VENTILATION IN MODERN WARSHIPS.

By Surgeon L. F. Cope, R.N.

It may be laid down as a first principle that pure air is as necessary to health as pure food. To ensure a constant supply of pure air is in a modern warship none too easy. There are several factors to contend against:

1. The limited living space. This may be taken on board ship to be about 200 cubic feet per man.
2. The absence of diffusion through the walls of the ship.
3. The love the bluejacket has of keeping all possible means of ventilation closed.

As against these factors must be placed the fact that the air surrounding the ship is good in quality and plentiful in quantity, and that when under way the movement of the ship tends to help ventilation by causing currents of air to flow through all the available openings.

In modern ships, then, there are two main methods of ventilation: (1) Natural—by means of ports, scuttles, and hatchways; (2) artificial—by electric fans.

Natural Ventilation.

In this the movements of air are entirely due to natural laws—diffusion, wind, and differences of weight due to differences of temperature. But it is very variable and uneven in its results, owing to the small space and varying power and direction of the wind. In a ship natural ventilation takes place entirely through ports and hatches. The former in the ship's side act as inlets, and the latter almost entirely as outlets, owing to their situations.

It is as well to have some idea of the ventilating power of a 15½-in. circular port. If situated, as it is in modern ships, 5 ft. above the deck with a hatchway near it as uptake 9 ft. above the deck, with a difference of temperature between the external and internal air of 20°, it gives an air delivery on a calm day (allowing for loss by friction) of about 13,000 cubic feet per hour—that is, roughly, sufficient for four men under good conditions. This would naturally be considerably increased if there was any wind blowing, but, if there is a man living or sleeping near such a port, the draught would be to him uncomfortably apparent, and the port would be partly or wholly closed, thus lessening its utility as a ventilating factor. The ventilating power of a port may be increased in calm air by fixing a wind scoop to it, and similarly hatches may be made to act as intakes by means of windsails. It is, however, quite apparent that when 150 men live on a mess deck it is quite impossible to arrange enough ports and hatches to supply them with sufficient air by means of natural ventilation alone.

In addition natural ventilation in ships is in most cases to a great extent stultified by too great approximation of intakes and outlets. It is evident that openings in the ship's side must be dependent on, and governed by, the positions of guns and considerations of strength of structure and by the efficiency of the ship as a fighting machine. It therefore frequently happens that one finds a port and a hatch in close juxtaposition. In such cases the air from the former goes straight out by the latter, causing a strong draught, but no ventilation. Natural ventilation alone cannot keep the air of a ship pure and sweet, even under the best possible conditions, while there are many days in the year when a ship is at sea, when by reason of wind and rough sea all ports in the ship's side, and not infrequently the hatches as well, have to be kept shut. For such occasions artificial ventilation is a prime necessity.

Artificial Ventilation.

In modern warships this is carried out by means of electric fans. Taking a typical ship of modern type, there are in all 62 fans, varying in size from 40 in. to 7½ in. in diameter, of which 7 act as exhaust fans and 55 as supply. Each fan is connected with a system of air ducts to distribute the air, and with a pipe led down from the open air to supply the air, the opening on deck of the latter being protected by a coaming and a movable mushroom top to prevent the entry of water. A supply fan forces the air into a main discharge pipe, from which at intervals proceed branches, each terminating in a certain space, and thus forming inlets for the space. On the various branches are louvres, and in this way the air is distributed all over the ventilated area, outlets being

provided, as in natural ventilation, by the hatches. The exhaust fans are connected with the engine rooms, and by their action tend to obviate the dissipation of heat throughout the ship. With regard to artificial ventilation, the following are the chief desiderata:

1. A sufficiency of trunks and louvres, of such a number as to allow 1 louvre to every 1,000 cubic feet of gross space, giving a supply sufficient for five men.
2. The avoidance of air stagnation and pockets of foul air in places far from natural ventilation. This can best be attained by having a large cone-shaped terminal to the air trunk opening low down and some distance away from the outlet, and also by having sufficient means of exhaust, a fan if necessary, to prevent the supply fan causing increase of air pressure without true circulation of air.
3. A maximum velocity of air at louvres of 1,000 feet a minute.
4. Louvres should be so placed, if possible, that the air from them does not blow straight on to a hammock, as when this is the case the louvre is shut by the occupant of the hammock.

The Sick Bay.

In the ship in question the sick bay has cot accommodation for ten men, which, with the staff, gives an air space of 425 cubic feet per man. The ventilation supply consists of four side-scuttles and three branches from a 12½-in. electric fan, which gives 4,000 cubic feet a minute. The exhaust is by a skylight and a 10-in. trunk fitted with a mushroom top. The sick bay watercloset has its own supply and exhaust.

Results of System of Ventilation.

With a view to estimating the efficiency value of ventilation, a series of estimations of the CO_2 content of various parts of the ship was undertaken under the following varying conditions:

(*a*) Optimum condition, with all scuttles and hatches open and fans running.
(*b*) With only natural ventilation.
(*c*) With only artificial ventilation.
(*d*) With scuttles shut, hatches open, no fans running; in fact, the bluejackets' normal.

As far as possible, in all cases in which figures are given there were approximately the same numbers of men present under each condition of ventilation. The results obtained are shown in the attached table. They may be classified as follows:

(*a*) Under optimum conditions, in practically all the living spaces, CO_2 was present to the extent of 0.6655 per 1,000 cub. ft.
(*b*) With only natural ventilation: CO_2 present equals 0.9095 per 1,000 cub. ft.
(*c*) With only artificial ventilation: CO_2 present to the extent of 0.8499 per 1,000 cub. ft.
(*d*) With no intentional supply of fresh air—in fact, with nothing but really natural ventilation: CO_2 present in proportion of 1.3046 per 1,000 cub. ft.

The above figures represent the average of 100 estimations under each of the stated conditions and probably err in over-estimating the CO_2 present.

As I have already stated, the cubic space per man in most of the living spaces on board is about 200 cubic feet. Having regard to the restricted space per man, it may be rightly considered that the system of ventilation at present in vogue is very fairly successful, particularly as regards the artificial ventilation.

In this connexion the following facts are of interest: All the living spaces in the ship, both for officers and men, can be supplied with fresh air by the ventilating fans. These are Davidson's sirocco fans, electrically driven, of 12½ in. diameter, capable of giving 4,000 cubic feet of air per minute when run at maximum speed with free inlet and outlet. One fan of this type is placed in each portion of the mess deck, being supplied with air by means of a trunk leading down from the upper deck.

The engine rooms are separately supplied and exhausted. The supply consists of four 35 in. fans, each giving 31,000 cubic feet per minute; two 25 in. fans, each giving 15,500 cubic feet per minute. The exhaust system consists of four 40 in. fans with a capacity of 40,500 cubic feet per minute each. This system is of extreme value in keeping under control the wild heat which naturally exists in large quantities in this vicinity.

A point of some interest is that the air supplied to the living spaces can, in the ship in question, be heated in cold weather. This is effected by passing the air from the fan through tanks in which are placed steam pipes, the steam being derived from the boiler and engine rooms. The heating area in the steam heater is so designed that it shall be able to keep the air in the living spaces at a temperature of 70° F. on a cold day at sea, but its great disadvantage is that the air, when supplied to the mess decks, is at a low relative humidity, 46 per cent. This hot air, therefore, has a greater drying power than the contained air, and consequently dries the mucous surfaces and brings the body under the debilitating influences of undistributed air of too high a temperature. Some scheme should therefore be evolved to add a trace of water by means of steam supplied to the thermo-tank, so as to bring the relative humidity of the heated air up to 70 per cent.

In the American navy an apparatus has just been installed in the *Alabama* for cooling and washing the air supply, but as no results are yet to hand, it is better to defer giving any opinion till some information as to its merits can be obtained from the United States naval authorities. Windsails and cowls do not exist as ventilating agents in the ship in question, so that the electrical fans are solely relied upon for artificial ventilation. Lastly, it must not be forgotten that, as the whole of the lighting of the ship is by electric lights, all the CO_2 produced is of human origin, and consequently there is less CO_2 to get rid of than in days when tallow candles were used for lighting purposes.

Analyses of Air in Various Parts of the Ship.

Part of Ship.	Contents in Cubic Feet.	Average No. Present.	Cubic Feet per Head.	Ventilation.	Impurities in Volumes CO_2 per 1,000 air.
I. Stokers' and marines' mess deck	13,460	64	210.3	A. Six scuttles, each 15½ in. diameter; hatchway; 12½ in. fan giving 4,000 cubic feet per minute	0.6925
				B. Scuttles open; fan not running	0.9025
				C. Fan running; scuttles closed	0.8312
				D. Scuttles closed; fan not running	1.662
II. Stokers' mess deck	13,500	65	207.7	A.)	0.6467
				B.)	0.9065
				C.) As for I above	0.8891
				D.)	1.561
III. Seamen's mess deck	11,900	55	216.4	A.)	0.6257
				B.) As for I and II above,	0.9482
				C.) except that there are	0.8543
				D.) seven scuttles	1.2815
IV. Sick bay ...	4,275	10	427.5	A. Four scuttles, each 15½ in. diameter; hatch; trunk from 12½ in. fan	0.5937
				B. Scuttles open; fan not running	0.8104
				C. Fan running; scuttles closed	0.7916
				D. Scuttles shut; fan not running	
V. Ward room ...	6,000	24	250.0	A. Two square ports; hatch; two doors; trunk from 12½ in. fan	0.5665
				B. Ports and hatch open; fan not running	0.7553
				C. Fan running; ports and hatch closed	0.8497
				D. Hatch and ports closed; fan not running	1.5015
VI. Officers' cabin	450	1	450.0	A. One scuttle, 15½ in.; louvres on door; trunk from 12½ in. fan	0.5203
				B. Scuttle open; fan not running	0.8875
				C. Fan running; scuttle shut	0.7786
				D. Scuttle shut; no fan running	1.165

Diseases Due to Impure Air.

The chief effect of occupation of a confined space is the disagreeable odour the air acquires from its occupants. This is due to excreta from the skin, the smell coming from the solid materials of the sweat, fats, cholesterin, etc. The discomfort experienced is due to increased temperature and excessive amount of water vapour, and also to respiratory CO_2, for it has been proved that chemically pure CO_2 can be added to the air to the extent of 1 per cent. without causing any appreciable effects. In the case of respired air, however, 5 per cent. causes headache and

depression, but, of course, in such a case there is also a great reduction in oxygen. The CO_2 in respired air is, therefore, taken as a measure of the index total impurities. The air in a ship always contains solid material, the human origin of which is strongly in evidence.

In a well ventilated ship the air is dry and relatively free from organic particles. The most important particulate bodies are the micro-organisms, and, "as a rule, the air of a ship is not free from solid material derived from the respiratory passages."[1] Ventilation, if satisfactory, would not only renew the air, but also get rid of any micro-organisms in it, and as the air at sea is plentiful and practically free from micro-organisms, it is the best possible air to use for such a purpose.

It is a well-known fact that sore throats, tonsillitis, and the syndrome of symptoms known as "an attack of liver" are commonest on board when a ship is at sea for any length of time. This is undoubtedly due to the fact that under such circumstances there is decreased ventilation, owing to scuttles being closed either to avoid draughts or because of the rough sea. In the ship in question, as soon as the ship goes to sea, all the ventilating fans are started and left running till the ship again gets into harbour, and it is to this that one attributes the freedom from tonsillitis and sore throats that has obtained for some time past in the ship.

General Considerations.

In conclusion, then, one may sum up the matter thus: a perfect system of ventilation should be designed in such a manner that the following points are all ensured:

1. Complete and sufficient changing of the air without draughts.
2. In the event of natural ventilation failing, there must be a system of artificial ventilation as good, if not better, to substitute for it.
3. In every case of supply or exhaust, there must be provision for corresponding outlet or inlet.
4. If the air is to be heated, it must also be supplied with moisture, so as not to lower its relative humidity.
5. The openings of all air trunks, whether connected with the supply or exhaust systems, should be placed on the superstructure, so as to enable them to be used at sea in all weathers.

With regard to these points I would suggest the following improvements on the system we now have in the ship in question:

Draughts may be avoided if inlet and outlet are placed sufficiently far apart. Such a system also tends to better ventilation by the prevention of pockets of undisturbed foul air.

With regard to the system of ventilating fans, it seems obvious that some steps must be taken to prevent the trunks from the fans being rendered useless by closing of the louvres and occlusion of the tubes by means of hammocks or clothes being introduced, as is frequently done. Louvres could be fitted with a padlock, by which means, when once opened, they could be locked, and thus prevented from being closed, while a stout grating placed over the end of the trunk would prevent its being stopped up by introduced foreign bodies.

The men's living spaces should be supplied with exhaust fans. This would tend to a much greater degree of efficiency in ventilation. If run in conjunction with the supply fans, and suitably placed, they should ensure almost perfect draughtless ventilation even under the most adverse circumstances, at the same time fulfilling the requirements of a sufficiency of corresponding inlets and outlets.

The openings of air trunks should indubitably all be placed on the superstructure, those on the upper deck being useless in a heavy sea, as they have to be closed to prevent water washing down them, while the superstructure is practically never under water, so that air trunks opening there would be always available.

There can be no doubt that the ventilation of a warship is a very difficult problem. The structure of a warship is such that its efficiency as a fighting machine renders all other points of secondary interest. In addition to the difficulties due to structure which have to be overcome, there are others due to the character and upbringing of the ship's inhabitants. The bluejacket cannot realize that the cleanliness of the air is as important as the cleanliness of the body, and having been brought up from earliest childhood in surroundings almost hermetically sealed against the entrance of fresh air, an atmosphere that has got past "stuffy" seems to him merely normal, and consequently he regards any attempt at the admission of fresh air as an infringement of his liberties.

In the face of such difficulties, the present satisfactory condition of the air in modern ships reflects great credit on the officers whose duties it has been for years past to gradually evolve a system which needs but slight attention to details to be classed as almost perfect.

[1] Gatewood: *Naval Hygiene.*

DISCUSSION.

Mr. W. H. Whiting, Assistant Director of Naval Construction, said there was hearty sympathy between naval constructors and medical officers afloat to improve conditions of life at sea. Exact observations by trained observers of those conditions were of value. The importance of the subject was due to the imperative necessity of developing the whole power of ships costing two millions in action, and hence the need for maintaining the human element in perfectly fit condition. But that particular problem, like so many others in ships, was difficult in itself and made much more difficult by special conditions of warships. Ventilation ashore had not reached in public or private dwellings a very high level. In warships it was more difficult, owing to (1) small space for men (150 cubic feet in a vessel carrying 400 men sleeping); (2) small height of compartments (8 ft.); (3) great subdivision called for by risks of foundering in action, and by increasing desire for privacy—it meant great lengths of ventilation trunks and loss of efficiency; (4) small side scuttles; (5) few openings overhead, due to need of clear upper decks with nothing to impede the fire of the big gun armament of modern warships; (6) two separate sets of conditions—harbour and sea. The tendency was to improve the conditions so far as artificial power was concerned, though more difficult now they no longer had open decks. The system was one of forced supply through trunks and louvres with only natural exhausts. In a 5,000 ton ship, with 400 men, there was a supply of fan power for 24,000 cubic feet per minute. In the best distribution of this supply was a large field for observation.

Fleet Surgeon Robley H. Browne, as recently in medical charge of a modern battleship, bore testimony to the enormous improvement in modern conditions, and the obvious desire of the Constructive Department of the Admiralty to deal with that question. There was no subject in which theory and practice differed so widely; the most elaborate arrangements made by experts were so easily defeated by non-compliance with programme for running of fans. He advocated a mixed system of supply and exhaust as most likely to attain the best result.

Fleet Surgeon Bassett-Smith said that ventilation had a direct bearing on the distribution of disease, more especially sore throats and tubercle, especially draughts and the presence of shut-up places. Any case present on a lower deck brought danger to the others, and should be weeded out at once. Mr. Cope's suggestion of adding steam was important but should not be pushed too far, as damp increased the growth of organisms; and that was a point, that the bacteriological contents of air was far more important to examine than the CO_2, as CO_2 in itself, as shown in submarines, might rise very high and yet produce no apparent ill effect; it was, however, an index of human contamination.

Colonel W. Culver James commented on the supply of air—or, better still, of oxygen—by a system of chambers of compressed air or oxygen from which the gas could be allowed gradually to escape when required into those parts of the vessel that were worst ventilated in time of need.

The Fifth International Congress of Medical Electrology and Radiology will be held at Barcelona from September 13th to the 18th. Among the questions proposed for discussion are the following: (1) The unification of methods in electrical diagnosis; (2) radioscopy and radiography of the abdominal segment; (3) the therapeutic properties of oscillating magnetic fields. Communications relative to the Congress should be addressed to Dr. Comas, Calle Cortès 613, pral. Barcelona.

SECTION OF MEDICAL SOCIOLOGY.

J. A. MACDONALD, M.D., President.

PRESIDENT'S INTRODUCTORY REMARKS.

DR. MACDONALD opened the proceedings with a short speech, in the course of which he traced the developments which had led to the establishment of the Section. He had endeavoured to devise a definition of the term "medical sociology," but for the moment could only suggest that it was the phrase by which could most briefly be described all the subjects to be discussed before the Section. They had an important bearing on medicine, but not forming part of its allied sciences were best discussed separately. Politics would be excluded.

DISCUSSION ON THE ECONOMIC BASIS OF HOSPITAL MANAGEMENT.

OPENING PAPER.

By BENJAMIN MOORE, M.A., D.Sc., M.R.C.S.,
Professor of Bio-Chemistry, University of Liverpool.

IN opening the discussion Professor Moore stated that there was an aversion on the part of the medical profession to present-day methods of managing hospitals, and a movement was on foot to bring their administration into line with the requirements of the profession. First sketching the history of hospitals, in order to ascertain the reason why the hospitals were treating medical practitioners ill, he said that the bias obtaining in the earlier development had rendered the systems incapable of adequate expansion to meet the national requirements of modern days.

The early eleemosynary atmosphere still hung round the hospitals, and the charity of the few still attempted in vain to carry out a national work for which sufficient funds could only be provided by the graduated contributions of the whole nation. A properly organized hospital system should provide (1) an adequate means of treating in a uniform way the serious diseases of necessitous people; (2) prevention of the spread of disease; (3) means of study and advance in medicine and surgery; and (4) means of instruction and professional training for the whole profession.

The staffs of both voluntary and Poor Law hospitals were at present appointed in many cases by lay committees, who knew little or nothing of the relative professional abilities of the respective candidates, and whose choice depended too often either on the candidate being personally agreeable to members of the committee or upon some other influence unconnected with professional ability.

There was needed some fair method of remunerating professional services in a tangible manner, apart from the *kudos* which the physician was supposed to derive from his appointment, and apart from the possible introductions to patients and practitioners in which it might result. This consideration applied especially to the case of the assistant staff, on whose members the greater proportion of the work often fell. The present system was most deleterious, because only a young man with ample private means could support the strain of dispensing with all salary, keeping up expensive consulting chambers, and spending money in many other professional ways during the seven to ten years before he began to earn an appreciable income as a consulting physician or surgeon. Hence those best fitted by natural endowments and professional attainments for taking up the highest work were often debarred for financial reasons from entering upon a hospital career.

In similar fashion, the fact that the various municipal and Poor Law hospitals throughout the country were administered each on an entirely different system by hundreds of small locally appointed bodies and boards of guardians, instead of by one national authority, rendered impossible continuity of appointment and satisfactory advancement among their medical staffs. The resident medical officers in Poor Law hospitals took up transient service in order to gain a little hospital experience, or, perchance, took a diploma in public health at some medical school or university in the neighbourhood. How much better would it be if these young men could enter a great national service and progress by steps until they reach the highest offices! The present system meant casual employment for junior members of the Poor Law service, which led nowhere and was most disastrous and wasteful to the public service. There was no connexion between such junior appointments and the better paid posts under the Poor Law, and the appointments to the senior posts were often made without system or method, according to the whims of the guardians, or the local influence which could be brought to bear upon them.

As a result of want of co-ordination both in voluntary and Poor Law hospitals, transferences of good men throughout the country from one centre to another were very difficult, and each city, borough, or county had practically to depend on its own local supply.

Many of the Poor Law hospitals were excellent, but in others the patients were crowded together under dangerously insanitary conditions under the care of a medical staff hopelessly disproportionate in number. In one Poor Law hospital recently visited by the speaker phthisical patients were accommodated side by side with non-phthisical cases in the blind end of a long ward, with no windows on three sides of the room. Over 500 beds in this hospital were assigned to the care of each junior resident medical officer. In such conditions, writing a death certificate might well be the chief thing done for many patients by the medical officer in charge.

In regard to out-patient departments much waste of public time resulted from the treatment of trivial cases which ought to have been seen and treated under a properly organized system by a practitioner outside, nor could any system of admitting in-patients prove successful if it did not include the co-operation of outside practitioners. A doctor's certificate that the case was one which could best be treated in a hospital should be necessary.

Proper co-ordination between the work of practitioner and that of hospitals could only be achieved when the custom of doing medical work for charity had been abandoned completely, and when all work, whether in or out of hospital, was properly remunerated either by the individual or by the State.

All these jarring and wasteful systems should be replaced by a properly organized system of State hospitals attended to by qualified and adequately paid medical men. This system should be co-ordinated with the work of the medical practitioner by ensuring that he was paid by the municipality, the State, or by an insurance system, for the work done by him outside for the poorer classes, so that when the patient entered a hospital he was sent in by the practitioner himself, because his case demanded hospital attention, the practitioner being paid the same amount by capitation whether his patient was in or out of hospital. In this way the public safety and the health of the patient would become the sole determinant.

Under such a properly co-ordinated system of national medical service, hospital abuse would become non-existent, and every practitioner in the country would be able to take his share in the work.

The second great evil of the profession, namely, club or contract practice on sweating terms, would also disappear automatically under such a system, for no private club system or friendly society could live in the face of a properly organized Governmental system, any more than could a private postal system for a single district compete with a Governmental postal service for the whole country.

DISCUSSION.

Sir HENRY BURDETT agreed that it was bad for the hospitals and worse for the profession that the present system of unpaid eleemosynary service should be continued. He was certain that it would be a saving for the voluntary hospitals of London alone to pay the medical staff £60,000 a year, rather than to continue the present system. In order to crystallize the matter, he would quote, as he had promised to do, a statement made to him by a gentleman actively connected with the management of a large London hospital, with a medical school attached. That gentleman said that in a clinical hospital the necessity and demand for material

was so great that the selection of cases eliminated altogether the social factor, that is, the social position and the means of the patient. Indeed, in his own out-patient department, it was notorious that patients capable of paying three guineas as private patients were treated because of their value for teaching purposes, to the exclusion of poorer patients. Of course it was known to many that there were serious abuses in regard to the admission of in-patients in the metropolitan hospitals. The system worked out in the following manner: A number of patients were set aside each day as eligible for admission, having regard to their medical and surgical requirements. These patients were divided into two categories, those bringing cards from outside practitioners, and those representing patients residing in the locality of the hospital and physically in a condition to warrant their admission. It happened at some hospitals, and probably at most, that the first of these classes, those bringing practitioners' cards, were first considered and admitted to the available beds. But it was on record that day after day the poorer people in the district, whose social needs ought to secure their admission first, especially as they came from the district supplying the funds for the upkeep of the hospital, were set aside, and their cases deferred to another day because there were no vacant beds. These were grave abuses, and there were others which the gentleman mentioned confirmed. The present condition of affairs practically meant that if the voluntary hospital was to be continually extended, and if free medical relief was to keep on growing and ramifying at the present rate, it would be impossible for the average member of the medical profession to live. Such a state of affairs was wholly wrong as well as unnecessary. It had grown up because, as the efficiency of hospitals had increased, the demand for medical treatment at their hands had extended to all classes of the community. Formerly hospitals were not popular, and the desire of people who fell ill was not to go to hospital, but to keep out of them. Nowadays, however, operation mortality had fallen so low that everybody wished to be operated upon. Indeed, as far as he could make out, the general trend of the public was toward the same state of mind as that of the Red Indian, who thought that a man had not fulfilled his mission unless he were tattooed. It was an attitude highly complimentary to the profession, but condemnatory of the common sense of the people. The present was a very important opportunity for grasping the whole question of medical relief, and placing it once for all on a proper basis. That basis was to secure the co-operation of all responsible for medical relief in every form, and to put it finally on a businesslike and practical foundation. This should be quite easy if advantage were taken of the Poor Law and of the intention of Government to introduce medical insurance and a national insurance scheme. It would secure the right of each member of the medical profession to live, which was at present being lost. There must be in every community a census of all the hospitals and infirmaries and all the facilities for service and the requirements of the community. The system of admission must be assimilated to that of American and other foreign hospitals—namely, by classifying the patients and dividing the hospitals into pavilions, having in those pavilions accommodation for every class of the community needing hospital care. Those pavilions should consist of four or five grades. There would be first the pavilions providing for the class for which these hospitals were primarily intended—namely, people who could maintain themselves when in health, but who could not meet the charge of medical attendance, and also for a certain number of what were known as Poor Law cases, possibly severe cases, for which payment would be made by the municipality or the State. In another pavilion would be patients who could pay something, but not the whole cost of the treatment. In a third would be those able to pay an inclusive fee, but not the cost of medical attendance. The fourth class would be those who paid everything, including refunding the fees of the medical men and the cost of their treatment. There should also be a fifth class—persons who, when they wanted hospital care, ought to pay for it at a remunerative rate. In that way abuses of so-called nursing homes would be got rid of at once. The idea meant that all the existing Poor Law system, all the existing voluntary system, and all the dispensaries, nursing and other agencies for the relief of the sick must be utilized. Every patient would come to a hospital on a basis which would preserve his self-respect, for if there was one thing in this country which the people required, it was increasing self-respect and greater discipline, and there was no better discipline for a young man than to provide for himself if he wished to live a healthy and wholesome life. These results would be attained if the Government and the authors of the Poor Law reports and the authorities of all medical institutions could be brought together into one representative body through a general council, to whom the whole matter should be referred and where it could be threshed out. It meant, in practice, that the bringing together of all the means of medical relief must secure the minimum of expenditure and the maximum of economy. It would enable all the buildings at disposal to be utilized, and would save the State an immense cost, such as that which would be entailed by the proposal of the opener of the discussion.

Dr. G. A. HERON (London) said that he was in agreement with the general trend of what had been said. He resented as almost insulting the statement which had been openly made or insinuated, to the effect that, for the unpaid work carried out in hospitals, physicians and surgeons were amply rewarded by the status which their hospital appointments gave them, and by the public notice and lucrative practice which they, it was asserted, obtained chiefly because of the fact that they held those appointments. In a public speech Mr. Sydney Holland had not hesitated to put forward a statement to that effect as the reason why he had told his audience that he was tired of hearing the praises of the unpaid work of doctors in hospitals. Mr. Sydney Holland was able to get such accurate information on these points that he ought to know that the great majority of hospital physicians and surgeons did not make large incomes from private practice, and gained from their hospital appointments no public status worth mention. A hospital to-day was a place to which any one might go and there receive suitable medical or surgical treatment free of cost provided that he was not discovered to be well able to pay for such professional services. A patient who hid the fact of his being well to do in order to receive medical charity at a hospital was not a deserving object of charity, and should therefore be deemed guilty of fraud and be punished, just as would a person found guilty of any other form of fraud. The office of almoner had been mentioned in connexion with this form of hospital abuse, but in large hospitals it was impossible for any one person effectually to ascertain the fitness or otherwise of the patients, who flocked in hundreds to their out-patient departments. Certainly in many hospitals no real effort was made to stop hospital abuse. The work of almoner should not be entrusted to the secretary of a hospital, because from his position he was obviously one of the last men who should undertake such work. The real remedy for the present most unsatisfactory condition of our hospital service was to place the hospitals under State control, to pay the medical and surgical staff well for the work done by them in hospital, and to throw the hospitals open to all people, rich and poor alike, who chose to go to them. To use this public medical service should be the right of every man, woman, and child in the country as a part of their citizenship.

Dr. MACKINTOSH (Glasgow) pointed out that the hospitals in different parts of the country were administered in very different manner. This led to overlapping, waste, and considerable degrees of mismanagement. In any scheme of reform it was essential that there should be uniformity of administration. He dealt briefly with the most marked characteristics of the voluntary, municipal, and Poor Law hospitals, and, in speaking of the effect of these three classes of institutions on the medical profession, stated that it should be the aim of the profession to take into consideration the interests not only of the staff of the various hospitals, but also the practitioners outside. In opposing the idea of universal municipalization of the hospitals, he pointed out that a lesson could be learnt from the fever hospitals. Practically every one sent their relatives and friends to fever hospitals when they were suffering from the notifiable infectious diseases. The loss to the practitioner outside was very considerable, especially

when the state of affairs which used to obtain was compared with the present condition. In respect of the administration of the hospitals, every member of the staff should receive an adequate salary. The full surgeons and physicians might receive honoraria and fees from students, but the assistant surgeons and physicians should be paid by salary. It was necessary that the hospitals should obtain the proper material for teaching purposes, but their principal use should be the treatment and care of persons suffering from disease. In this connexion he disagreed with Professor Moore's remarks. While he supported the idea that in-patients should be dealt with on a different plan to out-patients, he pointed out that there was but little in-patient abuse in Scotland. The best method of determining who should use the hospital and who should not was to trust to the medical practitioners who recommended the admission of the patients to judge rightly whether the case was suitable for hospital treatment from a surgical or medical point of view.

Mr. RICHARD KERSHAW (Secretary, Central London Throat and Ear Hospital) put forward as his first contention that medical relief ought to be as easy of access to the individual as the air he breathed, whether that relief was received at the hands of an ordinary practitioner or within the walls of a hospital. With regard to the co-ordination of medical charities, which had been insisted on by so many of the speakers, he felt that the time was fast approaching when the hospitals of this country would become the concern of the State. In support of that statement he referred to the use already made of the hospitals by the Army, Navy and Civil Service. On the vexed question of hospital abuse, the speaker mentioned that at the hospital to which he had been attached for over thirty years, he had used every means to abolish abuse of charity; the greatest difficulty with which he had to contend was the apathy of the medical practitioners themselves in rendering assistance. Nearly 40 per cent. of the out-patients and 60 per cent. of in-patients were sent to the hospital by doctors. For many years he had personally written to those practitioners who had sent patients, asking them if they desired them to continue attendance at the hospital; if so they were invited to witness the operative procedures and generally to consider themselves at all times welcome visitors to the hospital. The response or rather the absence of response to this means of keeping the patients under their personal observation was not at all encouraging. Each year a larger number of patients were sent to special hospitals by medical practitioners, and at his own hospital a real endeavour was made to check abuse.

Professor SAUNDBY (Birmingham) said that the differences of opinion as to how patients should be admitted to hospitals depended upon the varying conditions in different parts of the country. The ticket system was valuable from the financial point of view, but every one agreed that it ought to constitute no bar to the admission of any case of medical or surgical need whose circumstances justified it. The staff of the hospital must be the sole judge of the fitness of applicants. The recommendation of the general practitioner should be invariably recognized, but even this was unhappily not free from abuse. The speaker gave instances of patients who were well able to pay fees who had been sent by medical practitioners to receive special treatment; and of others who were medically or surgically unsuitable, and who were sent with intentionally misleading descriptions in order to secure their admission. He condemned the system of registration fees as leading to the gross scandal of hospitals advertising for patients. He desired to protest against the statement made by previous speakers that every man, woman, and child should have the right to hospital treatment. The plan of graded hospitals to which Sir Henry Burdett had referred might get over some objections, but he would like to see the plan in detail. He had thought over the matter a great deal, and had found no difficulty in what might be called the "nursing home" side of the question, but when it came to the question of the remuneration of the profession the subject became so thorny that he had shrunk from touching it.

Mr. HUGH KER (London), in discussing the question of hospital abuse, pointed out that the extension of the out-patient departments of large general hospitals exercised a serious effect on the general practitioner. Some friendly societies often dispensed with the medical man altogether and advised their members to go to the out-patient department of some adjacent hospital. He recommended the plan of consultation pure and simple most strongly as the only way of getting over this difficulty. This had been carried out by the Bolingbroke Hospital for some years past, by limiting admission of out-patients to those recommended by a ticket signed by the patient's own medical attendant. This method had worked quite successfully and abuse had been reduced to a minimum. The number of patients attending the Bolingbroke Hospital out-patient departments utilized for teaching purposes amounted in the year 1908 to 26,450, and in the year 1909 to 23,704. They were all cases of special interest, and, as the medical superintendent, Dr. Prior, stated, provided excellent material for the purpose of instruction. The cost per head in 1908 was 1s. 9d. and in 1909 1s. 11½d. This was an important consideration from the point of view of expense to the hospital authorities. Unless some method were adopted to minimize hospital abuse, a large number of most useful and hardworking general practitioners must cease to exist.

Dr. BUIST (Dundee) said that the idea that students' fees should form a source of reward of the hospital staff seemed like a suggestion that the medical teacher should surpass the inhabitants of St. Kilda by basing their economics on a system of living on their children. The training of the future medical practitioner was so much more important from the national than the individual aspect that the burdens of its provision should be borne by the public. Included in the question of hospital reform was a demand that the medical work should be better done in future than it had been in the past, and this implied so much more work that while there might be some redistribution of the profession, the total need of their services would be even greater than it was at present. The charitable element in the upkeep of hospitals was the legitimate descendant of the Lady Bountiful, who liked to be kind to her neighbours, regardless of whether she did them good or not, and it must gradually decrease. There need be no convulsion in the process of change, but the prospect of co-ordination of the whole hospital service of the country was very attractive.

Dr. MAJOR GREENWOOD (London) said that he did not wish to see the voluntary hospital system abolished but only very considerably improved. It would be most disastrous for the hospitals to be handed over "neck and crop" to the State. Many of Professor Moore's remarks struck at the principle of charity, though he admitted that this was the main element in the origin of hospitals. There was a spirit abroad inimical to charity, and it was voiced in the House of Commons in the debates on the school dinners. In the speaker's opinion nothing was better for the welfare of the State than charity, which should be encouraged in every way. Why, he asked, should a large burden be put on the shoulders of the taxpayers when wealthy members of the community were willing to take it on theirs? Why should the many able lay members of the community who worked in the management of our hospitals without fee or reward be dismissed? The dissociation of the profession from charity would not increase its reputation in the eyes of the public. Many practitioners were quite willing to perform charitable medical acts, though certainly a considerable portion of medical charity was much abused, and was bad for the public and the profession. If payments were given for all medical services, the hospitals would be bereft of their most valuable physicians and surgeons. In London, at all events, the hospital staffs would have to demand prohibitory payments or resign their posts. If the hospitals were staffed by physicians and surgeons of the same class as those filling most State and municipal appointments, they would certainly not appeal to public opinion as much as at present, and thus there might not be the same demands made upon them. In that case and to that extent present abuses might be rectified or abolished. Nevertheless, he could not agree that this municipalization of the hospital would be good for the medical profession, and he agreed with Professor

Saundby that provision for hospital treatment of all members of the community would tend to take away a large part of the business of the general practitioner.

Mr. Luckham (Salisbury), speaking of his own experience of voluntary hospitals, dispensaries, clubs, and Poor Law service, said that on this basis he had come to the conclusion that charitable work not paid at all was better done than ill paid contract work. The work of the provident dispensary he regarded as a compromise in the way of contract practice. While he was of opinion that the doctor should be the sole arbiter as to suitability for admission into hospital, he realized that the subscribers had a word to say, and suggested that a combined scheme might work well, subscribers' letters being made to require the endorsement of the patient's ordinary medical attendant.

Professor J. T. J. Morrison (Birmingham) thought that the radical suggestions put forward by Professor Moore and Sir Henry Burdett claimed and would receive general sympathy, and in their broad principles would be considered with a good deal of favour. There was a moral obligation resting on the community to provide for its sick and disabled members, not only the ordinary hospital provision of nursing and maintenance, but also adequately paid medical and surgical services. The notion that hospital staffs were duly repaid by reputation or public esteem must be rejected; it was an easy device for soothing the public conscience when confronted with its moral duty. Only a very small minority acquired princely incomes as the direct or indirect outcome of their connexion with hospitals; on the other hand large numbers had to work for years for the merest pittance of an income. He called attention to the incessant extension of hospital buildings and the ever-increasing crowds of patients, of whom a large percentage were unsuitable for hospital treatment, either because of their ailments or of their means. Last year Birmingham, with a population of about half a million, had dealt with some two hundred thousand hospital out-patients, apart from the Poor Law service. No one could doubt that this meant hospital abuse on a large scale. He advocated the promotion and development of the provident dispensary system with the view of diverting unsuitable cases from hospitals and of restoring to general practitioners a field of practice to which they were justly entitled, whilst at the same time preserving the self-respect and thriftiness of the patients. He thought that this would solve some pressing problems and be of genuine advantage to the public, to hospitals, and to the profession.

Dr. Lauriston Shaw (London) contended that it was possible to administer the medical attendance of the poor both in hospital and outside with efficiency and economy without the aid of charity. Charity should find its place in anticipating other forms of provision, and when charitable funds were placed at the disposal of the hospitals they should be properly used and not abused. He was greatly in favour of the out-patient departments assuming a purely consultative character. Finally, he dealt with the economic side of the questions under discussion, and concluded that the hospitals should not be regarded as being for the treatment of persons simply because these persons were poor. The medical or surgical aspects of the applicant's case should be placed foremost.

DISCUSSION ON THE SOCIAL ASPECTS OF THE FALLING BIRTH-RATE.

OPENING PAPERS.

I.—J. W. Ballantyne, M.D., F.R.C.P.Edin.,
Physician, Royal Maternity Hospital, Edinburgh, etc.

Hallam Lord Tennyson has told us that his father used to say: "The lavish profusion in the natural world appals me, from the growths of the tropical forest to the capacity of man to multiply, the torrent of babies." But *tempora mutantur, nos et mutamur in illis*, and Tennyson's "torrent of babies" is now a smoothly-flowing brook which threatens ere long to shrink into a mere runnel among rocks. It is incumbent upon sociology to take into account this new state of affairs which has somewhat unexpectedly discovered itself in our midst.

There seems to be no possibility of doubt that society in the long series of experiments it has been making upon itself has firmly established the conclusion that tampering with the institutions of the monogamic marriage and the family brings disaster sooner or later. So dangerous did the relaxation of the marriage tie seem to the Emperor Augustus that in B.C. 29 he directed stringent legislation against the renunciation of the married state then so common among the people; but, writes Merivale[1]:

> Upon this one point the master of the Romans could make no impression upon the dogged disobedience of his subjects; both the men and the women preferred the loose terms of union upon which they had consented to cohabit to the harsh provisions of antiquity; they despised rewards and penalties they audaciously defied.

In time the decline began and the fall followed of that great empire, and among the causes of its decadence we are surely right in recognizing a declension in morals, and especially a weakening of the family as the social unit upon which so much of what is permanent in society rests. Now, whilst history tends to repeat itself, it does not ever reproduce an identical set of circumstances, causes, or effects. It is true that the marriage tie is being attacked at the present time, and that the popular novelist finds much of his popularity to rest on the writing of problem novels, on the discussion of the "leasehold marriage," and on the representation of conjugal unions in which disunion is evidently impending.

But it is not from this side that the most dangerous assault is being made upon the family as the unit of society nowadays. It is not the procreation in increasing numbers of illegitimate children — whose place must necessarily be outside the family circle—which is to be feared, it is rather the non-procreation of legitimate offspring within the family circle, or their appearance in diminishing numbers in it, which is causing the sociologist the gravest anxiety. He dreads the disappearance of the family as the binding force holding society together and its replacement by the selfishly contrived union of two with its small degree of cohesive force, and with its self-imposed law not to add to its numbers. The very definition of the family as "a group of persons consisting of the parents and their children" may soon need revision, in view of the persistent decline of the birth-rate; a *childless family* is surely the bitterest irony, and, from the sociological standpoint, an irreparable disaster. I am, of course, speaking generally, and do not refer to the mating of the unfit or improvident when the arrival of offspring is rather to be dreaded than desired.

At the same time, I find it difficult to wax enthusiastic over eugenics, positive or negative. Of course, I approve in theory; by all means let us try to improve the breed; yet let us also remember that heredity is not the only factor in this business, and that there is an obstetric aspect of this problem often overlooked; head-pressure in labour may spoil much good and careful mating of the fit. The intellectually fit are not necessarily the reproductively fit. But it seems to me the eugenist has come amongst us in evil days; had he come when the births were going up by leaps and bounds he had been very welcome. But, let us put it this way, is a stock-breeder justified in attempting to improve the breed when he has to do with a rapidly decreasing herd? I am willing to hear evidence, but I do not expect to be convinced.

Recent years have shown that the limitation of the family is by no means a Gallic prerogative; it is a process which can be seen at work in Britain and her colonies, and in the Anglo-Saxon race everywhere. It is persistent and is growing at a rate in some countries which is much more rapid than what obtained in France. This attack upon the sociological unit is directed not solely against the topmost strata of society, but also against the middle and the lower middle classes, from which the upper classes are constantly calling for reinforcements. No doubt the causes are complex, and no doubt they differ somewhat from those that existed in Augustan Rome; but among them we may surely reckon the following strong forces.

There is, first, the dissemination of the knowledge of the possibility of limiting the number of pregnancies by other means than the dangerous induction of abortion, and in ways that do not include continence; this information has

[1] Merivale, *The Romans under the Empire*, vol. iv, p. 87.

been industriously propagated by the supporters of neo-malthusianism, and is being quietly handed on from one married man or woman to another all over the country. Time will tell whether the use of "checks" is indeed harmless; but there is already some evidence that a perfectly healthy state of the reproductive organs cannot be looked for when these organs are constantly being stimulated to a certain point, and as constantly being prevented from experiencing the natural consequences of the stimulation. It will be strange if bodily and mental well-being in women are found to be compatible with the frequent production of the sexual orgasm unaccompanied by its reproductive consequences, namely, pregnancy, childbirth, and lactation.

Another cause of the falling birth-rate is to be discovered in the growing love of personal ease and material comforts and luxury. Parents argue that children are expensive in every sense, and they grudge, more especially in early married life, the time and resources required for the procreation and upbringing of offspring; they hardly seem as yet to think of that future in which children can do so much to sustain and support the parent. Our present-day civilization is so complex a thing, that it seems to have no room for the baby; he finds no prepared place for himself in the "flat" system, and to the modern servants he is anathema. Is it possible, in views of recent inventions, that we are approaching the time when there shall be no longer any use for the horse, the carrier pigeon, and the baby?

Another cause is the late age at which so many marriages are now entered into; a large family is hardly to be looked for when the contracting parties are both more than 35 years old. This is not altogether new: Samuel Johnson's father was 53 and his mother 40 when he, their first-born, came into the world, and there was only one other; but opsigamy, as it has been called, is certainly increasingly common.

Yet other causes are perhaps to be found in the higher education of women (in America, at any rate, the college-trained girl has not become the mother of many children), in the entrance of women into economic competition with men, in factory labour among married women, and even possibly in the encouragement of athletics among girls. With regard to the last-named factor, I have certainly noticed a lack of capacity among athletic women to suckle their babies, although I have not specially remarked sterility. We have also to bear in remembrance that by the operation of hysterectomy for fibroids and other morbid states we may secure a woman's health and yet effectively prevent the appearance of offspring.

A scrutiny of the causes of the falling birth-rate makes it clear that they are of a nature not readily to be counteracted. We may meet the spread of dangerous information by the dissemination of correct notions regarding sexual health and continence properly so-called as opposed to selfish licence safeguarding itself against its reproductive consequences; we may endeavour to give the girl a higher education specially suited to her sex, and not simply a replica of what is prepared for the man; we may preach to the civilized nations of Europe and America the doctrine of the strenuous, the heroic, and the self-sacrificing (but not child-sacrificing) life; we may make it illegal for a married woman to work in factories or in such other ways as will lessen her chance of bringing her children to the birth; and we may hold out legislative and fiscal bribes to the fathers of large families; but it is more than likely that the Briton and American of to-day, like the Roman of Cæsar's time, will "despise rewards and audaciously defy penalties." At any rate it will be some time before we can get these counteracting influences set to work; and it will be a long time before they begin to yield results in an ascending birth-rate among the classes of society which we wish to see increasing. Is there nothing to be done in the meantime?

It is now more than nine years since I ventured to forecast the future in respect of the consequences of the falling birth-rate, and, in a vision, to see the attempt being made in pre-maternity hospitals to check the antenatal loss of life, whilst the terrible mortality among new-born infants was being counteracted by the diffusion of correct views regarding infantile hygiene. In these two directions, the prevention of prenatal death and the saving of neonatal life, there seemed to be hope.

It was then pointed out that there was, so to say, a reserve of young lives, antenatal and neonatal, sufficient to make good the loss arising through the fall in the birth-rate, which might be tapped; if one could but diminish the number of abortions, and if one could but keep in life 50 per cent. of the babies dying in the first year after birth, there would be immediately an addition to the sum total of the population enough to remove the danger arising from the voluntary limitation of the family.[1] Much has now been accomplished along these lines. In a later contribution[2] I entered more in detail into the question of the phenomena associated with the falling birth-rate. I found them to be a high and practically stationary infantile death-rate, an increase in the number of deaths ascribed to premature birth, and, almost certainly, a marked increase in the frequency of the occurrence of abortion and stillbirth. I did not labour to prove that these phenomena were due to the falling birth-rate, although one might with some assurance so regard them; I simply contented myself with pointing out their existence, and I drew attention to the fact that if they could be checked there would immediately be a saving in infantile lives sufficient to reduce very materially the danger of class extinction or race suicide; whilst this was being done attempts could be made to solve the greater and more difficult problems of how to meet the growing tendency to limit families to one or two children, and how to make parents willing again to face the responsibility of a larger number of offspring.

That the infantile death-rate can be reduced has been shown now not only in Huddersfield by the method of rewards so conspicuously successful there, but also in other towns by the expedient of intelligent health visitors and the spreading of a knowledge of the simple laws of a healthy infancy. The correction of erroneous ideas regarding the proper food for young infants has already saved many lives. The prevention of factory and other work done outside the home in the case of pregnant and nursing mothers ought still further to reduce both antenatal and post-natal mortality.

The introduction of a carefully devised system of still-birth registration would do good both in letting us know how many lives are so sacrificed and in enabling us to detect the contributory causes and so to prepare the way for prevention. Surely there should be some legislation to check the abuse of the thinly-veiled recommendation of induction of abortion which we are constantly seeing under such titles as the "prevention of irregularities peculiar to females" and the like. More complete and continued medical control of pregnancy could hardly fail to be beneficial in preventing some at least of the more serious complications of the pregnant state and the concomitant risks to the life of the unborn child. The medical man is still far too ready to leave his pregnant patient to shift for herself and to content himself with an occasional urinalysis and a passing reference to diet and the state of the bowels; he ought boldly to annex this field of practice and teach his patients that he can make their condition healthier and happier than when they relied on old wives' nostrums or allowed matters to go their way unchecked; he will soon find that he is being sent for at an earlier date than the second stage of labour, and for other purposes than to tie the cord or put on forceps. Sir James Simpson, the centenary of whose birth falls to be celebrated next June, did away with the worst pains of labour first by means of ether and then by chloroform; let it be our endeavour to lessen the weight and irksomeness of pregnancy and give our patients first a normal gestation and then a painless confinement.

It will be seen from what I have ventured to state that I do not regard any immediate checking of the fall in the birth-rate as a likely consequence of anything or of all the things that are being done with that end in view. The tide is still flowing in the direction of a limitation of families, and flowing strongly; let us conserve what we can of the lives that would be lost if the old haphazard plans of dealing with antenatal and early post-natal existence were left unreformed; let us thus limit so far as may be the inroad being made upon the resources of the future; and let us also prepare our measures for resisting

[1] *Amer. Journ. Obstet.*, xliii, 1901, p. 593.
[2] *Trans. Edin. Obstet. Soc.*, xxxii, 1906-7, p. 17; *Encyclopaedia Medica*, vol xv, 1910, p. 327.

the stream of tendency towards the extinction of true family life, and be ready to bring them into full action when we detect the earliest sign of the ebbing of the tide. It may be years yet before the educated peoples of the earth realize the deep and abiding truth underlying the Psalmist's declaration that "God setteth the solitary in families . . . but the rebellious dwell in a dry land." At the same time, it is the duty of every attentive student of sociology to repel by every means in his power the attack that is being made on the integrity of the family as constituted by law, human and divine. We cannot make for ourselves a queen as the bees do.

II.—F. E. Fremantle, F.R.C.S., F.R.C.P., D.P.H.Lond.

The speaker having demonstrated verbally and by charts and tables the extent of the fall in the birth-rates of different countries, and the interaction of death-rates, birth-rates, and marriage-rates, and the fact that so far as England is concerned fertility is still highest in rural counties and lowest in London, despite the effect of overcrowding in houses and areas, said:

Let us, then, briefly consider the quality of the decline. University College of the University of London issued in 1906 the first of the studies in national deterioration from its department of applied mathematics, in which Heron showed results of superlative interest as to the relation of human fertility to social status during the years 1851 to 1901.

They may be summed up as follows:

1. In 1901, in homes where many domestic servants are kept, there the married women have fewest children. This relation is exceedingly close.

2. Prevalence of cancer, especially amongst females, is associated with a low birth-rate.

3. Where labour is of the lowest type, where poverty leads to the pawnbroker and forces the child at an early age into employment, there the married women have most offspring.

4. The greater the overcrowding, and the prevalence of phthisis and pauper lunacy, the higher is the birth-rate.

5. Poverty, drunkenness, and absence of thrift are associated with high infant mortality and high birth-rate.

6. About half of this difference in productivity between the poor and the well-to-do is due to difference in age of the wives; the other half to lesser fertility, or to a lessened exercise or deliberate restraint of fertility on the part of the well-to-do.

7. The association of undesirable social conditions and high birth-rate has doubled in intensity during the last fifty years.

8. Fifty years ago districts with the highest birth-rate had the lowest infant mortality.

9. Fifty years ago the difference of birth-rate in districts of different social status was accounted for by the difference in mean age of wives.

During these fifty years the relation between low social status and high birth-rate has doubled in intensity, and half the difference between districts of different social status is now due to a reduced nett fertility in the more cultured, more prosperous, healthy and thrifty classes of the community.

Karl Pearson has shown that 25 per cent. of the married population produce 50 per cent. of the next generation. It follows, therefore, that in increasing degree our nation is being stocked from its less prosperous classes. As prosperity is in general the result of ability, and as heredity of character and ability is beyond dispute, the nation is degenerating in the quality as well as in the quantity of its birth-rate.

A. No one disputes the main causes that are at work. The Royal Commission that inquired into the decline of the birth-rate in New South Wales in 1903 reported that:

> the people . . . led astray by false and pernicious doctrine into the belief that personal interest and ambitions, a high standard of ease, comfort, and luxury are the essential aims of life, and that these aims are best attained by refusing to accept the consequences which Nature has ordained shall follow from marriage . . . have neglected and are neglecting their true duty to themselves, their fellow-countrymen and to posterity.

A clergyman of sound judgement and experience in one of the poorest parts of London tells me he finds policemen, small tradesmen, and even the church-going steward of his club all limiting their families. Some have been actually urged to do so by the young ladies of the Women's University Settlement near by. A domestic servant in the West End told her mistress recently that she and her young man after some years of faithful courtship were still in no hurry to marry; he was keeping his mother and she did not wish to marry until she was too old to bear children. These are instances either of self-restraint or prevention of pregnancy, owing to foresight and the struggle for a certain standard of comfort.

In towns which are the seats of textile industries and much women labour, the birth-rate is abnormally low; while in mining districts, where woman labour is but little employed, the birth-rate remains high. In the former towns woman's labour is often essential to the financial maintenance of the family, and restriction to child-bearing seems to them imperative. The result is that the men, no longer in their first youth when they marry, select wives who will add to the family income, and so enable them to live a more comfortable life. A waterside labourer in Rotherhithe was found at home in the middle of the day one Friday. "I've done four days' work," he explained, "and it's time the missus did 'er bit." Combined with the knowledge now spread through all classes of the means of prevention, such a sentiment accounts for the greater part of the decline of the birth-rate.

Other influences are at work. Employers advertise for servants without a family. Model dwellings limit families to two children; if a third arrives, out they go. Even Government services forbid their officials to marry. But in doing so they make a grievous mistake of valuing only the man's immediate service—considerably diminished by the unnatural state of celibacy—and not realizing the far greater value to the State of securing the issue of its good stock.

In the upper social classes the motive is consciously prudential, either with a view of lessening the incumbrances on the purse or with a view of avoiding the discomfort of pregnancy and the responsibility of parenthood. In the majority of cases I believe the prudential motive honestly predominates; but at the back of it is the unconscious struggle, not for the existence either of parents or children, but for the "standard of living," an ever-increasing standard, of which the parents, for the sake of their reputation, friendships, or prospects, dare not fall short. It is all a struggle for the survival of the fittest; but only for the temporary survival or superiority of the fittest individual, not for the survival or superiority of his descendants for all time.

The responsibility for this direct or indirect limitation of fertility does not depend on one sex alone. Mr. and Mrs. Whetham, in their remarkable and fascinating book on this subject, entitled *The Family and the Nation*, remark that:

> The quiet home life necessary for the right birth and management of a large family is incompatible with many external activities and with the gratification of a desire to seek an apparently larger sphere of immediate work and influence in social, industrial, and political life. For young married women such external activities are a direct menace to the future welfare of the race. Even for unmarried women the indirect danger is great, especially in setting a false idea of life before the rising generation.

The girls' public schools boast of the strong, determined, well-equipped young women they turn out prepared to face the battles of life. This is their mistake. When the girls are so prepared, they are wholly unprepared to look at the married life as the centre of their aim, to confide their whole selves and futures to men, who shall be their husbands and not their mere colleagues. In all classes of life the appetites of girls are being whetted for distractions, that, however harmless or even useful in themselves, unfit them for domestic duties. Their ideal would seem to be to beat men at their own game; the corollary is that they get out of practice at their own game. The crown of this arch which they are building for themselves is political power: and woman suffrage in any kind or form is therefore profoundly inimical to the birth-rate.

As with the woman, so with the man, the fault is not due as a rule to conscious selfishness. Thanks mainly to improved communications due to the discovery of steam and electricity, competition has now free play not least in matters of industry; for, politics apart, com-

petition is the essence of free trade. Whatever conditions ease the pressure of competition and promote the prosperity of less wealthy members of the able-bodied classes will remove the chief obstacle to the procreation of larger families. But, in addition, men must be attracted to the desire for larger families. Now that their eyes are open the result depends on their desire. It must be stimulated by patriots, moralists, and all who instruct the mass; and, above all, public opinion must be aroused to honour the good parent of large families, and to condole with the disappointment of those less fortunate. The Church of Rome exercises her disciplinary powers with effect, forbidding all use of preventive checks except under priestly dispensation; and the result is that Spain, Bavaria, and Ireland alone of European countries have increased their fertility during the last twenty years; and the contrast in birth-rate between the Roman Catholic French and the Protestant English Canadians is vastly to the former's credit.

B. At the same time it must be recognized that many who are married are unable to procreate when they wish to do so. In such cases one-child families are not rare. It may be that a sedentary life of modern comfort tends to excessive sexual indulgence during and after pregnancy. Few married men and few women have any rules by which to guide their sexual conduct in married life as they would the other factors in personal health. A race-horse stallion will serve twenty-eight or thirty mares in three months, but for the rest of the year he lives a celibate life, is regularly exercised, and is not overfed. It would be well to have the opinion of general practitioners and of specialists in women's and nervous disorders as to the effect of unseasonable sexual intercourse in throwing the generative machinery out of gear. Some such rules should be taught in the medical schools, and passed on by medical men to all whom they may be able to influence.

For discussing the national influence of the birth-rate, let it be remembered that both quality and quantity are required. Let us therefore urge on the Goverment to act in accordance with two recent Royal Commissions and to provide for the detention both of the feeble-minded and of the able-bodied pauper. Two large factors in degeneration of the race would thus be eliminated.

Finally, let us refuse to be deceived by the declining death-rate. The present death-rate of 15 per thousand, if permanent in a stationary population, would imply an average life of 66 years for every infant born. The death-rate must again, before long, begin to rise. A birth-rate, on the other hand, may sink to extinction. This, as Polybius tells us, caused the downfall of Rome. This, says Sir John Seeley, was the reason for the decay of Greece. This, indeed, must have been the end of all extinct races, or rather the means to the end, for a race unable to maintain its population is swallowed up by its neighbours and only survives in mixed blood or in scattered communities by the salutary effects of adversity.

Such is the future before the British Empire in the face of populous Russia and the ever-expanding millions of China and Japan. The vast tracts of Australia cannot permanently be retained by five millions of population. Canada, too, and South Africa call aloud for emigrants; and no part of our Empire is in effect so distant from us now as the North of Scotland was from London a century ago. But if we no longer breed men and women to stock our Empire, we have, as the Americans would say, bitten off more than we can chew of the world's surface. Let us remember the 358,000 infants of whom the nation is every year being deprived, and let an ever-increasing effort be made to stir up public opinion to the national degeneration now in progress, and to the need for the abler classes of the community to provide generous families of successors who shall transmit their abilities to future generations for the service of Church and State.

Summing up, then, it would appear that the decline of the birth-rate is due to three separate but coincident factors:

1. The rational, due to the knowledge of methods of prevention.

2. The economic, due to the immoderate competition resulting from the revolutionary inventions of the Victorian age and the consequent unlimited freedom of communications.

3. The moral, due to modern indulgence and lack of discipline.

For the moral and economic factors we in this Association can propose no remedies. But for the rational factor we must regard ourselves as responsible for the remedy. Both personally and in public we must insist, as no other profession can, on the paramount importance of Nature's own methods and checks; on the serious dangers resulting from celibacy, from prostitution, from interference with the normal married life, from disregard of Nature's seasons; and, not least, on the healthiness, gaiety, and value, throughout the life of all concerned, of a well-stocked nursery.

III.—A. W. GILCHRIST, M.D.,

Nice.

I WILL venture to presume that it is not necessary for me to offer any word of apology for the somewhat abstract nature of the contribution I will make to this discussion. The exceptional circumstances of my professional position entail the disadvantage—possibly the advantage—of bringing me more in contact with what might be called the cosmical elements of sociology; the conclusions, therefore, at which I am able to arrive in regard to so abstruse and so recondite a science must necessarily partake of this very general character.

I propose to pass briefly in review the chief ideals, arising from the fundamental principles of inequality and equality, which have presided over the evolution of society during the period mainly embraced by the last century. This procedure has seemed to me to constitute the most scientific method of arriving at a just appreciation of the present vital condition of the nation, and the one most susceptible of suggesting a remedy for the causes, ominous and unmistakable, of impending organic decay. We will consider the aristocratic ideal, the ideal of wealth, with its subordinate ideals of science and technical aptitude, the ideals of democracy, and of socialism or cognate forms of collectivism, and lastly, the remedial principle, the aesthetic ideal, such as it is implied in Thomas Carlyle's attributes of the hero, and in the attitude of the super-race so poetically defined by Carlyle's great German successor, Frederic Nietzsche.

One of the most eloquent passages in the famous sermon on infidelity written by Robert Hall refers to the land which offers me, in common with a growing number of our countrymen, a generous hospitality. This passage, as far as I can trust my memory, is couched in the following words: "In one country, and that the centre of Christendom, revelation underwent a total eclipse, whilst atheism, performing on a darkened stage its strange and fearful tragedy, confounded every age, sex, and rank in one indiscriminate slaughter and proscription; that the imperishable memorial of these events might teach the last generation of man to regard religion as the pillar of the State, the parent of social order, which alone has the power to curb the fury of the passions and to secure to every one his right, to the laborious the reward of their labour, to the rich the enjoyment of their wealth, to nobles the preservation of their honours, and to princes the stability of their thrones."

But what was this religion whose transcendental attributes could sustain so imposing a political and social superstructure? It was the religion of inequality, the religion which sanctioned the arbitrary distinctions of feudal times, which divided the fair land of France into baronial manors, and placed upon every dominating peak a frowning castle and a predatory chie[illegible] the religion which saw the vassal oppressed by his lord, and which placed the life and liberties of the tiller of the soil, even the integrity and sanctity of his family life, at the mercy of his master. And the force which gave movement and unity to the infuriated mobs that swept away every vestige of privilege and of power? This also was a religion, the religion of equality, "the spectral resurrection of the Christian phenomenon," whose goddess Robespierre erected for the worship of rationalism, the goddess who issued that message of liberty, equality, and fraternity which still aims at presiding over the destinies of the civilized races of the West.

This fascinating illusion of the French Revolution, however, was simply the vestment that concealed the new ideal of wealth under the auspices of which the American Colonies,[1] twenty years before, had thrown over their allegiance to the British crown, and deprived

[1] The old ideals, fostered by Catholicism, probably saved Canada for the Empire.

our country of its fairest possessions, and some of its choicest stock. The same illusion impelled the French revolutionary armies upon their political crusade, while the same ideal was really the mainspring of Napoleon's predatory wars.

How was the mother country affected by the decay of the autocratic or aristocratic ideal, and the rise of the ideal of wealth? It was compensated for the loss of our American heritage by a marked expansion of its commercial field of activity, by a large increase of population, and a corresponding rise in the birth-rate. And the ideal of science was enhanced in dignity in proportion to its power of producing and distributing gold. So with the ideal of technical aptitude and skill, to work was to be considered noble. It is here we can perceive the fallacy of the new ideals. If labour was dignified because it created the wealth, the chief factor in the greatness of the nation, it could dignify every class, and thus the agricultural population was attracted to the town. However humble the worker, however rudimentary the skill he displayed, it must command respect. It could be enhanced in dignity even by being organized, even by losing all individuation.

Thus arose Industrialism, with its disastrous illusions and its factors of future sociological disintegration—Industrialism, which spreads its roots with alarming vigour into the lower strata of society, but produces a sickly and unlovely growth, and no flower to adorn its faded and ephemeral leaf. It gave us, however, Free Trade, which probably retained the Colonies as a precious inheritance for the future, and disarmed the cupidity of an envious and hostile world.

Industrialism, or the principle of equality which leads to its development, conduces logically and inevitably to the rule of democracy, and with the relative fertility of the lowest classes—also easy to foresee—to the advent of social collectivism.

Those who would pierce the future, discover, according to the attitude they assume, two deeply contrasted pictures. When all property is nationalized, and every instrument of production common to all, such happiness as the poor and disinherited of to-day dream as forming the appanage of the rich alone will be the ample wealth of high and low alike. That will be a period when every section of society will be co-ordinated in the harmonious pursuit of felicity and when universal peace will reign supreme. And the other picture? The other picture can only paint the Fates, more often the Erynnes than the Eumenides, weaving the thread of life, and Atropos cutting it when she pleases. But it also shows the Englishman[2] sweeping from clime to clime, as his Viking ancestors flew over the Northern sea; the Englishman too noble to engage in menial labour and too noble, if needs were, to exact it from his ethnical brother, a master, like himself—the Englishman who will know in the exuberance of his vitality that war and courage have done greater things in the world than the love of our neighbour itself.

I have implied throughout these remarks that every school, almost without exception, of biology and sociology, has agreed in insisting upon the present physical and psychical deterioration of the race. This one exception is a school of selectionists, which seems to have for its chief representatives Sir E. Ray Lankester and Sir William Thiselton-Dyer, and for a vigorous and prolific popularizer, our interesting colleague, Dr. Archdall Reid.[3] Every other modern evolutionary school, I repeat, whether professing allegiance to Darwin or Weismann, whether Galtonian, Mutationist, or Mendelian, is unequivocal in its verdict: the race seems to be faltering in its course.

Although the school of biometricians, of which Professor Karl Pearson is the ablest exponent, is often suspected of confounding the content with the form of knowledge, it is to biometrical authorities that recourse is usually had in discussions such as ours. Professor Karl Pearson's Huxley Lecture for 1903 is a consultative document of this character. It is distinctly despondent in its tone. "I fear," he says, "there really does exist a lack of leaders of the highest intelligence in science, in the arts, in trade, even in politics. I do seem to see a want of intelligence in the British merchant, in the British professional man, in the British workman." Professor Karl Pearson spoke at the close of the South African campaign. He refrained from making any allusion to the dismal display of inefficiency betrayed in the early military operations of that war. And yet nobody could have told us better than he that it would have been folly to expect much more. I walked down the Mall two days ago and saw the handsome statue lately erected to the memory of the gunners who died in South Africa. As I contemplated the speaking figures, I could not refrain from a reflection much like this: Why was it necessary that so often brave men should have deliberately laid down their lives to redeem the honour of the army in so many of those fatal Southern fields? And it seemed to me that the spirit of the Spartan hero could have told us why — Leonidas did not expect his helots to die at Thermopylae!

Professor Arthur Thomson apparently does not think that disaster such as this, relieved as it is by much that was noble—that disaster so ominous for our prestige—is a function of the vital military material furnished to us by intense industrialism. "May not the physical deterioration," he tells us,[4] "which the military examinations, for instance, reveal, be in great part due to the crushing burdens of militarism itself?" "As Napoleon[5] reduced the physical stature of the French nation, as the Roman Empire rooted out the best . . . so we are now paying," he continues, "the biological bill for past wars."

Professor Arthur Thomson is a professed and active Weismannist; he belongs to a distinctly dualistic school. His is the vision which sees the world eventually ruled by the eternal principles of Justice, of Goodness, and of Truth. He wishes to have the interest in eugenics quickened; he thinks, seeing "the spreading enthusiasm for health," that a promising line of activity is that of trying to promote social variations. Although he knows that his friend, Mr. Bateson, would prefer mutations and genetics, irrespective of finalism, he wishes, as we see, the object of sociology to be ethical.

As transformists, with the aesthetic ideal, the will to power, and the human type, cast, as we have said, in the hero-mould of Carlyle, the Lamarckian can find little room for a remote ethical or utilitarian social ideal. Nor will he wait passively, even on his native soil, for selection, natural or "rational"[6] to accept or reject him. Least of all when that soil is Britain, red or green. The proud scope of our sociology is to be Imperial; have we not met under the aegis of the Imperial Institute?

Let the home of our race be the Empire, and the Briton a dweller in many climes. This is not an illusion; we want the Effort; and has not the inspiring spirit of Birmingham told us of a project which may be one of our means to an end?

One of our means to an end, but only one. For we also deserve empire even more than purple Rome herself. We would give every subject, race, and creed its highest and most efficient expression. To accomplish so exalted a scheme our principles must be three: We must substitute the aristocracy and predominance of race for the aristocracy and rule of class; we must utilize chemical and biological science in adopting a discriminating law of migratory climatology as an essential basis of federation; and last, of all remember that Force fixes the rank and the degree of goodness and that moral codes must vary in time and space.[7]

IV.—Dr. D. W. Hunter,

Royal Albert Asylum, Lancaster.

DR. HUNTER showed that children born at either extreme of the reproductive period were liable to be defectively developed, and that the offspring of parents born under similar conditions showed more "defect" than when the parents occupied an intermediate position in the family. Of the children of the working classes, it could be shown that the elder-born children were more liable to defect than the subsequent born, up to and including the seventh born. With the eighth born, however, there was a sudden sharp rise in the liability to "defect," and the type of defect became more severe than that affecting the elder born. The liability increased steadily in still later members of the family. The defect associated with the

[2] I use the word in its broadest sense.
[3] See the *Laws of Heredity*.
[4] *Heredity*, pp. 529–534.
[5] See J. de Gaultier, *De Kant à Nietzsche*, pp. 322 and 327, who invokes a very different cause for the same phenomena.
[6] Or irrational, that is, bacterial or ethylic. *Laws of Heredity*, ch. xxiii.
[7] The closeness of the family tie was largely responsible for the loss by France of her colonies and provinces.

decline of the reproductive faculty was worse on the whole than that associated with the beginning, but there was less of it. Of 1,849 children under observation, only 142 were offspring of parents where the parental mating included a ninth or later born child. Owing to the defective development of the elder born children, the limitation of the family to two or three children inevitably meant a nation of idiots, and that within a few generations. The national method of breeding in this country was little short of insane. Somewhere about 24 to 25 years of age a woman was best fitted to give birth to her first-born. After 25 years of age the capacity to bear a good child as a first-born diminished. The power to reproduce well steadily increased with regular pregnancies until the mother had reached about 37 years of age, after which it declined very rapidly. A period of sterility, either artificial or natural, lowered the quality of a child born subsequently. Artificial sterility begat natural sterility, and natural sterility begat idiocy. The fit stocks in England were hardly ensuring their own survival, and on the whole were leaving behind their worst children. The unfit stocks were steadily on the increase, and every effort was being used to ensure that such increase would continue.

DISCUSSION.

Dr. BUIST (Dundee) hoped that members would remember the fact implied in the remark, "I wish I were as sure of anything as Tom Macaulay is of everything." There was a danger of introducing into the discussion crude political applications of the scientific facts, and it was necessary to maintain in all things a judicious scepticism which would allow members to hear quietly what they might believe touched causes dear to them. During recent years much work had appeared from the biometric school, and many of its results were apt to be misapplied. As a statistical method the basis of the school could not be impugned, but its conclusions required correct biological and economic interpretation. Take, for example, Heron's paper on Relative Fertility. Of its three conclusions, the first, "that 25 per cent. of this generation produce 50 per cent. of the next," expressed an almost self-evident resultant of a fertility of married pairs ranging from zero to ∞. The second meant that certain qualities were heritable which were formerly considered to be purely individual. This was already orthodox. The third —to the effect that the higher fertilities associated with undesirable social factors—could be accepted, but it needed proof that these undesirable social factors were the expression of undesirable heritable character; without such proof there was danger of a fundamental fallacy. The facts and factors of the falling birth-rate were capable of expression in terms of biology, and probably better in terms of economics. For example, one of the evident factors in the falling birth-rate was the increasing industrial employment of women. This in many of its features might be merely a transient social experiment which some persons might describe as the last effect of a system of economic organization based on the principle of underselling. In the medical profession, the Association had been able effectively to combat this, and it was probable that similar action would modify this factor all over the economic field. In analogous terms, the falling birth-rate might be described as a semi-conscious strike of the parent for better conditions of social employment, allied perhaps to the workman's contention for restriction of the number of apprentices. Before allowing too great anxiety over the relatively greater fertility of the poor, one must be convinced that the heritable qualities thus selected were as undesirable as the social conditions of the environment. It was not impossible that the relative infertility at the other end of this scale might be a natural protection for society against the biological qualities of the prudent egoist, whose "success" from a social point of view was not necessarily a gain from the biological. In so far as the claim had been made for definite teaching on these subjects in medical schools, he hoped that the teachers would not forget the maxim, "conceive it possible that you may be mistaken." After all, it was a great consolation that in spite of the varied social experiments, of which there were partial records extending over five thousand years, there was no good evidence of any radical change in the biological value of the human character or intellect, none for degeneration, and little more for measurable advance.

Dr. DULBERG (Manchester) agreed with the view expressed that the tendency for the birth-rate to fall could not be avoided. All energy should therefore be directed to diminishing infantile and juvenile mortality. The principal cause of the former was the absence of breast-feeding and injudicious artificial feeding. In Cheetham, on the outskirts of Manchester, the infantile mortality was exactly half of what it was in Ancoats, which was similarly located; and the fact that the bulk of a large part of the population of the former consisted of Jews, combined with the circumstance that the majority of Jewish mothers suckled their children, was a sufficient explanation. Many women of the working classes might well be encouraged to adopt wet-nursing as a calling. Such occupation might be an evil but it was a lesser evil than the employment of these women at mills and factories. As a magistrate of Manchester he saw a deal of the seamy side of life. He had come to the conclusion that much of the juvenile mortality and juvenile disease and crime was due to the absence of maternal influence and bringing up. The employment of married female labour should be reduced as much as possible.

Professor BENJAMIN MOORE (Liverpool) pointed out that the slight decline in the birth-rate shown to exist was not the great danger signal it was supposed to be, but rather the simple biological reply to a given set of good economic conditions. It was a well known biological law that even a micro-organism, when placed in unfavourable conditions as to food and environment, passed into a reproductive phase, and by sporulation or some special type produced new individuals very rapidly. The same condition of affairs in the human race was shown even by the fact brought forward on the other side in the discussion—namely, that one-half of the new births came from the least favourably situated one-quarter of the population. Hence, over-rapid birth-rate indicates unfavourable conditions of life, so that (so long as the population was on the increase) a lower birth-rate was a valuable indication of a better social condition of affairs, and a matter on which we should congratulate the country rather than proceed to condolences. The increasing population with reduced birth-rate indicates better conditions of life and better conservancy of life; and as this increase in population was shown by Dr. Fremantle to be occurring over all our colonies, the home country, and all the civilized countries of Europe—save France, where the population was only stationary and not falling off—there seemed little cause for alarm in a reduced birth-rate within such bounds that population was still rising. Still more was this seen to be the case when it was reflected that there must be an upper limit of population which these countries could comfortably support, and that this maximum end-limit was being approached with increasing slowness according to a natural law of biology and economics, so that any artificial attempt to reach the maximum sooner was only to be deprecated as scientifically unsound. Turning to the relative birth-rates in different countries, it was observable that the least civilized of the countries spoken of—namely, Russia—had the highest rate, indicating again that more unfavourable conditions of life favoured higher birth-rates. It might be asked, "Is it desirable to advocate such a more rapid rate of reproduction amongst our less favourably situated fellow countrymen, that we produce a race at the level of the Russian peasant rather than our own more virile countrymen?" It had been stated as a matter of history earlier in the discussion that nations like Rome, with a falling birth-rate, had been annihilated by war; but this was not always what history had taught, and other nations had disappeared as world powers by allowing excessive prolific reproduction to sap the virility of the race. Even from the fighting point of view quality was even more important than quantity, as anyone might realize who reflects upon the possible outcome of a war struggle between the virile Jap and the prolific Chinaman. It was not, of course, desirable that there should be disproportionately greater reproduction from the lower strata of the nation, but when they were told that the lower quarter of the nation was accountable for one-

half of the new births, they must remember that according to the above quoted bionomic law this always had been so, and, further, that the strata of society were not stationary. Out of the half born in the lower ranks in any given generation a great number passed upward to a better rank in the succeeding generation, so that the relative proportions did not greatly change, and there was, in addition, an exceedingly heavy death-rate in the lower strata. There was also no moral obligation of any kind on members of the middle classes to produce large families, because members of this class had a perfect right to expect to bring up and train their sons and daughters to retain a position in their own rank in life, and under present-day economic conditions a man in the middle classes could rarely afford to bring up and educate a large family to take a position in his own class. There was just as much, if not more, obligation to bring up children properly, and as they had a right and expectation to be brought up according to their birth, as there was to bring children into the world and allow them to drift downwards. A smaller number of children so brought up in middle-class life was a more valuable asset to the nation than a larger number allowed to drift to a lower grade. From the point of view of quality of the new births, the urging of a rapid rate of child-bearing by the medical profession might have disastrous results; it was of far greater importance to urge upon both working and middle classes that there ought not to be a too rapid production of children in the early years of married life—a process enfeebling to both mother and offspring, and usually followed by a full stop, either artificial or natural, on reproduction altogether. In the interests of both mother and children, there should be a period advocated of two and a half to three years between each birth, for after the prolonged physiologically active period of nine months' gestation, followed by nearly the same of nursing, there ought to be a period of about a year before the next gestation began. Even with such intervals there was on an average quite a sufficient period of sexual life after marriage to allow for five to six healthy births, and families of this medium size were generally best in their physique and viability. Thousands of children were lost to the community every year by over-rapid production by mothers enfeebled by recent childbearing, and amongst those who survive were to be found a great preponderance of the weaklings and unfit of the population. It accordingly followed that a diminishing birth-rate combined with an increasing population was not a thing to be deplored, since it spoke of better economic conditions and more prosperity amongst the working classes, whereby children survived more frequently after they were born, and became stronger and more virile citizens as they grew up.

Dr. GRACE CADELL (Leith) regarded luxury and vice as the chief determining causes in the fall of the birth-rate. The conditions which perhaps chiefly damaged the health of offspring were gonorrhoea and syphilis. The former, as was well known, was the most prolific cause of sterility, while the latter was a terrible cause of post-natal and prenatal death. There should be more freedom for women. It was against reason to expect a woman to bear a child every year. In this respect the speaker recalled the Jewish laws, especially noting the regulation with regard to celibacy during pregnancy and the period of lactation. The use of checks to conception was wrong, but it was impossible at the present time to do entirely without them. Sterilization by removal of the ovaries was at present undertaken too frequently.

Dr. R. K. HOWAT (Middlesbrough) said that a falling birth-rate might be desirable or not according to circumstances. Dr. Fremantle had mentioned, when considering social status in relation to birth-rate, that poverty, drunkenness, and thriftlessness were associated with a high birth-rate; that the higher social strata were characterized by the smallest families, and the lowest strata by the largest families; that this relationship had doubled in intensity in the last fifty years. In these circumstances the fact of a falling birth-rate was to be deplored. Such conditions do not make for an efficient population. The community comprised those who paid, and those who received. These groups corresponded approximately to the fit and the unfit; that is, the more valuable and less valuable (as regards national efficiency). The unfit were maintained, not by the State as a whole, but by the more valuable part of it. This was inevitable; but the extent to which it was being carried in this country begat a feeling of resentment. The present and prospective size of the burden was a factor in deciding people, on economic and social grounds, to limit their families. Drunkenness, thriftlessness, poverty, filth, domestic disorder, and social degradation, were closely associated. Whatever their exact mutual relationships, it was certain that the first was often and largely causal. The rearing of children, the habitual living of their seniors amid such conditions and influences must be prejudicial to their national value. Hence the individuals so affected tended to maintain, and to hand on to their children, these bad conditions of life. Were this evil chain broken the net result would be almost certainly a rise in national efficiency. And were the method of breaking the chain inexpensive it would result in a marked lightening of the national financial burden. There was nothing inherently impracticable in legislation to this end. The effectiveness of legislation largely depended upon the extent to which it expressed the opinion and the will of the community. Supposing it were enacted in this country that every man and woman convicted a stated number of times of drunkenness should be, *ipso facto*, operated on, the former having his vasa deferentia, the latter her Fallopian tubes divided, what results might be expected? There would be no subsequent offspring of such individuals exposed to evil social conditions. Apart from any previous children, the burden of these people would end with themselves. The numbers likely to perpetuate unfitness would be directly diminished. Indirectly, the good effects would, probably, be still greater. The fact of conviction, its inevitable operative sequel, and the physiological effect of the latter upon the offenders would be matter of common knowledge to their friends and associates. The consequences, at least in part, could easily be foreseen. The consciousness of their functional stigma, and the "chaff" of their social equals would be borne by the offenders unsustained by any feeling of glorious martyrdom. Those less advanced would scarcely fail, from fear of the ridicule of their fellows, to restrain somewhat their tendency to earn it. The suggested procedure was directed toward one set of circumstances alone. But its indirect effect would probably reach far beyond these in respect to birth-rate and national efficiency. It would possess certain obvious advantages—for example, cheapness (for it entailed no prolonged and expensive detention), simplicity, effectiveness (part of which would be direct, immediate, certain), while it would not deprive the subjects of the benefits of internal secretions. Such proposals were probably out of harmony with prevailing public sentiment, but in this respect they resembled many others which time and its changes had brought to pass.

Dr. FRANCES IVENS (Liverpool), as a gynaecologist, pointed out the importance of gonorrhoea as a widely spread cause of sterility in women. Statistics showed that at least 33 per cent. of the women suffering from gonorrhoea were sterile. Wider recognition and treatment by the medical profession of the milder and latent forms of this disease would be an important factor in combating the declining birth-rate.

Dr. MUIR (Glasgow) believed that the question of the falling birth-rate was rather political than medico-sociological. As a medical man the falling birth-rate did not concern him in the slightest. There were large families among the poorer classes in Glasgow whose fathers were earning 15s., 18s., or 20s. a week. The effects of deprivation, vice, and depravity were evident in the children, and it would be for the good of the country if such children were never born at all. Nature obviously made an attempt to limit the number of individuals in the succeeding generations by attacking the productiveness of the individuals of the present generation.

Dr. HELEN HANSON (London) said that, thanks to the higher education of women, their sports and their larger share in national life, the integrity of family life was on the up-grade. The modern mother was the true com

panion of her husband and children. The more a mother shared her children's life the better it would be. An immense amount of sterility, gynaecological disease, infant mortality, and race degeneration was caused by vice. It had been found that the more women came into public life the more vice decreased. In Mohammedan countries, where the speaker worked, women were placed under more artificial restrictions than in England, and the amount of immorality and race degeneration was appalling. On the other hand, in Australia, since women had taken part in the political life of the country, the "age of consent" had been raised, morality was on the up-grade, and infant mortality, which used to be almost the highest among civilized countries, had become almost the lowest. One speaker had intimated that athletics were inimical to motherhood, and the reason that women took them up was a foolish desire to emulate men. The true explanation was that women wanted to live the lives of human beings. One speaker had stated that in his experience it was the selfishness of the woman that prevented parentage. Her own experience was that the woman longed to have children, but the man's selfish love of luxury prevented it. But it was natural that the experience of men and women differed, and that the aggrieved husband should talk to the man doctor, and the aggrieved wife to the woman. That was why men and women were needed together in public life, to prevent lopsidedness and wrong impressions. Still she had heard of cases where for selfish reasons women refused to have children. But it is unreasonable to expect a woman to consider the good of the State when at every election time we emphasize the fact that it is no concern of hers. Men and women were now more considerate of their progeny than formerly. People with phthisis or insanity in their family did not marry or did not have children, and people whose means did not enable them to be certain of providing comfortably for a large family had small ones. The restrictions placed on the labour of married women were introduced with the innocent intention of increasing the birth-rate and race efficiency, but legislation carried through without consultation with those most concerned—that is, women—was liable to defeat its own object. The State enforced celibacy on nearly all its women officers—queens and charwomen were almost the only exceptions. In many middle class families, when something had gone wrong, the mother became the breadwinner. In the old days, when the father was an invalid or died, there was nothing for it but the hard, uncongenial, unremunerative labour of the boarding-house and inferior school and a miserable start in life for the children. If the production of children was a work of national importance why did the State penalize marriage and the bearing of children? This cause operated too among the poorer classes and produced race suicide. In Birmingham medical statistics proved that infant mortality was greater where restrictions were laid on the labour of married women, not because Nature necessarily approved of these women working but because she did very strongly disapprove of their children starving. Lastly, at the present time, millions of the upper and middle class women, *quâ* women, were undergoing a struggle severer than any recorded in the history of the world. An analogy might be found in the early Christian era. At times of persecution women hesitated to marry and bring children into the world, to suffer as they suffered, and moreover they knew that their loyalty to their faith might lead them—the mothers—away from their homes for longer or shorter periods to the detriment of their families. The Pauline advice was—under that present distress—to remain unmarried. The same held good now. The women of the present day hesitate to bring daughters into a world which treats them so harshly. The more a woman was refused a natural development as a human being, by so much was she the worse a mother. A normal, untrammelled woman was quite as fond of children as man. Consult her, give her a free hand, decline to treat her as cattle were treated, and little more of race suicide would be heard.

Dr. ELIZABETH BENTHAM (London) recalled a speech made the previous day in which the speaker had pointed out that the influence of the profession in future legislation would be in exact proportion to the reasonableness of the views expressed, and suggested that the profession should give less heed to prejudice and more to proof Several of the statements made concerned matters which could by no means be taken for granted at present; for instance, it was stated that higher education and the economic competition of women and the teaching of athletics to girls tended to lower the birth-rate and to make women less efficient mothers. In her own experience, strong and athletic women made the best mothers in every sense. There was clearly need of more real companionship. Many of the causes mentioned were merely symptoms of poverty, and this was really the root of the matter. If healthy children were wanted, there must first be healthy mothers, and an inspection of the conditions of those attending any of the out-patient departments sufficed to show that the general standard of health among the working classes was a very low one, and that the women of this class aged very quickly. A very large number of families existed on 25s. a week, or less. This meant a very small supply of bread, butter, and beef, and it was evident that large numbers of women, who were always the first to go short, were chronically underfed. In such families it was idle to expect a high average of healthy pregnancies, and there was the strongest inducement to the voluntary limitation of numbers. It was time that a new departure was made, and that it was recognized that the economic conditions were the real problem. A national minimum wage would do more to check infantile mortality, stillbirths, and the use of abortifacients than even the prohibition of the education of women.

Mr. SOMERTON CLARK (Felixstowe) said the existence of the nation depended on the existence of the army; the army must have officers. British private soldiers preferred to follow officers belonging to the upper classes. Many of the best officers were the sons of old officers, but to-day the birth-rate in officers' families was very small. This was much to be regretted. The remedy was to bring the facts of the future danger to the knowledge of the officers and their patriotism would rise to the occasion.

Dr. BINNIE DUNLOP (Brasted, Kent) said the decline in the birth-rate was most satisfactory in so far as it revealed a growth of the much needed feeling of parental responsibility. It was only unsatisfactory in so far as it was occurring in the fitter sections of the community. Statesmen must therefore aim not only at eliminating the obviously unfit but at relieving the more fit of the unnecessary financial burden of the less fit.

Mr. L. W. REYNOLDS (High Wycombe) said the Section should remember that it was the better classes of society that were the greatest culprits in this matter; witness the decrease of candidates for holy orders, and also candidates for the public services. They must also remember that the colonies were crying out for recruits. How was it possible to remedy this? The Church should do something. The Bishop of Oxford had called a commission to investigate the subject. The medical profession also should show women the importance of allowing Nature to take its course, for physiological reasons if for no other, for example, the physiological rest of the ovarian organs. It had been calculated that at the present rate not a single Frenchman would exist in 400 years. How long could the British race count on surviving?

Dr. BALLANTYNE, in reply, said that the discussion had shown that he had taken a moderate view of the subject, and had avoided either extreme. The majority of the shots discharged by the various speakers had passed him and hit someone else. In reply to Dr. Hunter he pointed out that the beginning of sterility was often an abortion. Even if the picture were drawn at its worst, it could not be conceived that all the children saved by the prevention of abortion would be idiots. He instanced the case of Dr. Samuel Johnson, who was born semi-asphyxiated when his mother was no longer young; and the case of the Carlyles might have been very different if no miscarriage had occurred. In reply to Professor Moore, who spoke "on the other side," he believed that the weight of opinion tended to the putting on of the brake to check the national tendency to diminish the birth-rate. In response to Dr. Cadell, he entirely agreed that gonorrhoea was a widespread cause of sterility, and that the profession could do much to

remedy this. He quoted the opinion of Noeggerath in this connexion. As for Dr. Howat's contention, he did not consider that it would be possible to improve the breed from a rapidly diminishing stock; voluntary sterility and selection were not compatible. He could not quite follow Dr. Hanson, and was doubtful if her claims that education of women had improved the integrity of family life could be sustained. In any case the proofs adduced did not convince him. In reply to Dr. Bentham, he was quite willing to accept her statement that athletics did not diminish the power of lactation; all he had said was that a woman hockey player had informed him that all her fellow players had the experience of being incapable of suckling their infants.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

CONGENITAL COLOUR BLINDNESS.

WHEN the colour sense from the standpoint of Holmgren's wools and Williams's lantern amounts to complete or nearly complete blindness to red and green, it influences and limits the expression of the face. If a colour-blind person be intelligent and alert, the expression of face is an appeal to the observer for a cause.

My experience has been almost entirely with the wage-earners of the railway service, who, in many cases, may be described as leading grey lives. These men when entering the service are examined in batches of four. I nearly always detect a candidate who has a very defective colour sense by his face. I also occasionally select a man as having a very defective colour sense, and find that he can pass the two tests successfully. He belongs to a class who, dull and unobservant, select the wools slowly and confuse blue with green; the colour sense is normal, but the mind is indifferent to colour. A colour-blind person's face is devoid of warmth or humour; it is dull, still, and monotonous in the sameness of its expression. When a man blind to red and green is unintelligent his face suggests a mild degree of dementia which his conduct and conversation disprove. The voice of a green-blind in conversation is an unmusical monotone. The appreciation of music in the colour blind appears to diminish as the colour sense diminishes. The almost complete colour blind generally admits to deriving no pleasure from music. A man, however, may be almost tone deaf and have normal colour sense. I carefully examined two boys at the commencement of this year, healthy, unintelligent lads, and green-blind. In each case I had difficulty in eliciting a knee-jerk.

Sydney, N.S.W. G. H. TAYLOR, L.R.C.S. and P.

A CASE OF VERONAL POISONING.

A LADY aged 40 had been suffering from slight depression with insomnia for some time, for which she had been sent into the country for rest and change of air. She had been accustomed to take 15 grains of veronal for the insomnia, but this she stated was only on rare occasions. She had shown no evidence of suicidal tendencies. At 11 o'clock one evening she took 75 grains of veronal (five 15-grain powders). The lady with whom she was staying went in to say good-night to her, and the patient said to her, "Wish that I may sleep and don't wake me or rouse me from my sleep, it means so much."

The lady did not suspect what had occurred and the next morning found the patient in a deep sleep. She remained so till early evening when the friend became somewhat alarmed, especially as the patient's face looked drawn and grey, her eyes sunken and she was in a clammy perspiration.

After repeated attempts at rousing her by slapping her face with a wet towel, etc., her friend at last succeeded in getting her to take a drink of water, and speak to her in a feeble voice, after which she was restless and uncomfortable and vomited at 10 p.m. (nearly twenty-four hours after taking the drug). She passed no water till 8.30 next morning, when she passed a large quantity, containing haematoporphyrin.

She was not seen by me till 2 p.m. that day (thirty-nine hours after the dose). She was then quite conscious, in a very lachrymose and depressed condition, gave an accurate account of what had occurred, confessing that she had taken the veronal with suicidal intent, having read the morning before in the daily paper of a fatal case after a similar dose. Her pulse was fair, 72, regular. She was suffering from great thirst, tongue coated, breath offensive. She was complaining of vertigo and had ataxy, but could move her legs freely in bed, though she said they felt like a dead weight. Pupils equal, somewhat sluggish reaction to light. The haematoporphyrinuria was diminishing, but was still present; she was now passing water freely. There was *no rash*. From this time the symptoms gradually subsided, and she made an uninterrupted recovery.

Considering the enormous dose she took, it seemed to me extraordinary that she was so little affected, especially as she had no emetics, and did not vomit till twenty-four hours after taking the drug.

The case in some respects is similar to the one reported by Dr. Sowden in the BRITISH MEDICAL JOURNAL of July 16th, but his patient took even a larger dose, namely, 100 grains.

MARY E. MARTIN, L.R.C.P.Edin.,
Hove. L.R.F.P.S.Glas.

Reports

ON

MEDICAL AND SURGICAL PRACTICE IN THE HOSPITALS AND ASYLUMS OF THE BRITISH EMPIRE.

WEST SUFFOLK GENERAL HOSPITAL, BURY ST. EDMUNDS.

TREATMENT OF TETANUS BY INTRASPINAL INJECTIONS OF MAGNESIUM SULPHATE.

(By EDWARD JOHNSON, M.B., Ch.B.Aberd.)

ON March 7th, 1910, F. C., a boy aged 16 years, sustained a gunshot wound of the right foot. The bullet was expressed and the wound soon healed. He returned to work, but after about a week began to complain of pain in the back and throat. Later, joint pains developed.

On admission on March 30th he had trismus, opisthotonos, and tonic contractions of the muscles of the abdomen and legs, the spasms coming on at frequent intervals.

Chloral hydrate and potassium bromide were given every two hours, and, in addition, I injected, intraspinally, 45 minims of a 25 per cent. solution of magnesium sulphate (previously boiled in a sterile test-tube) through the third lumbar interspace. Tetanus antitoxin (10 c.cm.) was injected subcutaneously into the abdominal wall. After about an hour the spasms diminished considerably in frequency and in severity. The beneficial effect lasted for more than twelve hours.

The process was repeated on April 1st, the tetanus antiserum being on this occasion injected intraspinally, along with the magnesium sulphate. Next day, magnesium sulphate alone (3j) was injected. Relaxation of the muscles was observed after each injection.

The patient's condition was so much improved that it was not found necessary to inject again for three days. On April 5th the spasms became frequent again, and 3j of magnesium sulphate solution was injected into the fourth lumbar interspace. Muscular relaxation resulted, and the spasms gradually ceased.

The patient now sits up in bed, his grin is no longer sardonic, and he is apparently quite cured.

Of course, one cannot say whether the ultimate cure was due to magnesium sulphate, to antiserum, or to Nature, but I have no doubt that the distressing spasms were at least temporarily relieved by the lumbar injections.

I am much indebted to Dr. Kilner for his permission to publish the notes on this case.

Reviews.

OBSTETRICS.

Professors Gilbert and Fournier, who are responsible for the choice of Professor Fabre to write a condensed treatise on obstetrics[1] for their doctor's library, tell us that he is a master of the art of teaching, that he can expound useful facts with luminous clearness, and that his 466 original illustrations are rigorously exact. All this praise seems to us to be absolutely just. Professor Fabre sets forth his subject in the most beautifully orderly and systematic way. Everything is in its proper place, every statement clear and definite. But the matter of the author's teaching is to the English practitioner more interesting and important than the manner thereof. So we have looked through the book to see what the opinions of the eminent Lyons teacher of obstetrics are upon certain difficult questions. As to placenta praevia, he is in accord with most, in following the teaching of Braxton Hicks. He advises against plugging the vagina because it is painful. But when we come to read about accidental haemorrhage the professor startles us. He divides these cases into benign and grave: *benign* being cases of partial separation of the placenta, *grave* those of complete separation. The mortality of the latter cases he says is 60 per cent. for the mother and 100 per cent. for the child. His treatment of these cases is vaginal Caesarean section. Our difficulty is that every case appears at first to be benign, and we do not know, and Dr. Fabre does not tell us, how we are to distinguish a case that will remain benign from one that will become grave. We know that nine cases out of ten of accidental haemorrhage are slight, and end in recovery. The mortality is nothing like 60 per cent. The mortality of vaginal Caesarean section hitherto has been 15 per cent. so far as we know. What it would be if done upon patients exhausted by haemorrhage so great as to lead to a reasonable belief that the whole placenta had been detached, we refrain from conjecturing. We think the English general practitioner had better be content with the old-fashioned practice of rupturing the membranes and putting on a tight binder. Taking another subject, Dr. Fabre has a strong belief in the treatment of eclampsia by large doses of chloral hydrate. He gives 18 to 30 grams (℥iv to ℥j) the first day, 10 grams the second day, 6 grams the third day, and then 4 grams a day for several days. By this treatment he claims to have brought the mortality down to 9 per cent. This is much better than the 50 per cent. death-rate which has followed Caesarean section in this disease. We may add that the illustrations are many of them photographs from life, many diagrammatic, but all excellent and original.

In our issue of May 6th, 1908, we noticed a book entitled *The Rotunda Practice of Midwifery*. The second edition of this is now published, with a shorter title, *Practical Obstetrics*.[2] It is much more than a reprint. One of the authors, Dr. Wrench, has now left the Rotunda; and Dr. Hastings Tweedy has been assisted in the preparation of the second edition by one of the present assistant masters, Dr. J. R. Freeland. The general character of the book remains the same. It is the *Rotunda Practice:* and the authors seem to think that the Rotunda represents, if not finality, at least authority; and that outside the Rotunda there is little to learn. In the preface they draw particular attention to the article on uterine inertia. This has been rewritten. Under the title of "secondary uterine inertia" they give this name to the rare condition first described by Litzmann, and afterwards by Matthews Duncan, as "premature retraction of the uterus"; and further on they say "secondary uterine inertia is accompanied by the signs of obstructed labour." In more than one well-known textbook a sharp contrast is drawn between secondary uterine inertia and obstructed labour: and we think it a pity, and hardly fair to the student, that commonly used terms should be employed to denote entirely different conditions. This peculiar use of the term "secondary uterine inertia" is not the only instance in which the authors show their imperfect acquaintance with other than Rotunda midwifery. They do not know how to decapitate. They tell the reader to disarticulate the vertebrae with Braun's clumsy hook and then cut through the soft parts with scissors. If they will get Ramsbotham's sharp hook (not the serrated hook advertised in connexion with the name of a more recent obstetrician), and use it as Ramsbotham directed, they will find that it will go through the neck like a guillotine, in a fractional part of a minute, and they will send Braun's decollator to a museum. The authors have never heard, apparently, of subcutaneous symphysiotomy, although it was discussed by the Obstetrical Society of London in 1902. The London student will come to grief if he thinks this book an adequate preparation for his examinations in midwifery. And the authors do not know of a chemist in Dublin whose ergot is to be relied upon; for they recommend an American preparation.

The seventh edition of *The Practice of Midwifery*,[3] a work by one of the ablest teachers of his time, Dr. A. Lewis Galabin, revised and added to by a younger specialist of the highest eminence, Dr. G. Blacker, cannot fail to command careful study by the practitioner and student. Dr. Blacker's revision has been very thorough. In the application of mathematical principles to the explanation of the mechanism of labour, the book remains unrivalled. The section on accidental haemorrhage is a curious one. In the first edition, published in 1886, plugging the vagina was recommended for the treatment of accidental haemorrhage when the cervix was undilated and labour had not commenced. This advice was subsequently cancelled on the ground that candidates at the examination hall found it unfavourably received. This was not a consideration that would have influenced Matthews Duncan or Braxton Hicks. Most authorities, the authors now tell us, considered that it was dangerous, on the ground that fatal bleeding might take place into the uterus behind the plug. This is rather a hypothetical objection. The real objections were stated by Braxton Hicks. He was speaking of placenta praevia, but his remarks apply equally to accidental haemorrhage. He said: "With regard to pressure by the tampon, I believe the general consensus in British midwifery is against its use, and with this I am in accord, partly because unless perfectly done—and this is difficult—it is of no use, and if perfectly done it is very distressing to the patient, especially if it be necessary, which it often is, to renew it to avoid septic generation." These are solid and grave objections. The authors say, "Experience appears to justify this treatment, which is now generally accepted." Is it? We turn to Munro Kerr's *Operative Midwifery*, published in 1908, and find him stating: "In Germany there are few who favour the treatment by plugging; the same also applies to France and America" (p. 602). Further on he says: "In this country most recent writers, with the exception of the Rotunda school, favour this treatment (dilatation of the cervix), and trust to it rather than the plug" (p. 605). If Munro Kerr's statements are correct, it is going too far to say that plugging the vagina is now generally accepted. And we think the weighty objections urged by Braxton Hicks should have been stated. The authors state that the tampon was recommended as early as 1776. It has therefore been on trial long enough for its merits to have been fully demonstrated. Further on the authors say, speaking of all cases together: "The statistics of the results of treatment by plugging are very slightly better than those of the old method, not more than might be

[1] Bibliothèque du Doctorat en Médecine. Publiée sous la direction de A. Gilbert, Professeur à la Faculté de Médecine de Paris, et L. Fournier, Ancien chef de clinique de la Faculté de Médecine de Paris. 1906-1910. 30 volumes. *Précis d'Obstétrique.* Par Fabre, Professeur à la Faculté de Médecine de Lyon, Accoucheur des Hôpitaux de Lyon, etc. Paris: J. B. Baillière et Fils. 1910. (Demy 8vo, pp. 750, figs. 460. Fr. 15.)

[2] Oxford Medical Publications. *Practical Obstetrics.* By E. Hastings Tweedy, F.R.C.P.I., Master of the Rotunda Hospital; and G. T. Wrench, M.D., late Assistant Master. Second edition. London: Henry Frowde, Oxford University Press; Hodder and Stoughton, 1910. (Demy 8vo, pp. 501. 12s. 6d.)

[3] *The Practice of Midwifery*, being the seventh edition of Dr. Galabin's *Manual of Midwifery*, greatly enlarged and extended. By Alfred Lewis Galabin, M.A., M.D., Consulting Obstetric Physician to Guy's Hospital, etc, and George Blacker, M.D., B.S.Lond., F.R.C.S. Eng., F.R.C.P.Lond., Obstetric Physician to University College Hospital, etc. Illustrated with 503 engravings; many of the new illustrations specially drawn by T. W. P. Lawrence, M.B., B.S., F.R.C.S., Pathologist to University College Hospital and Curator of the Museum, etc. London: J. and A. Churchill. 1910. (Roy. 8vo, pp. 1140. 18s.)

expected from the effect of modern improvements in antiseptic midwifery." Accepting this view of the matter, is not Braxton Hicks's objection, that it is "very distressing to the patient," a serious consideration, which the student and practitioner should bear in mind? The chapter on precipitate and prolonged labour contains some statements likely to confuse the reader. Thus, he reads of "inertia of the uterus or a tendency to tonic contraction, instead of active rhythmical pains." To us it seems that uterine inertia and tonic contraction of the uterus are quite opposite things, and the former does not tend to pass into the latter. In a subsequent paragraph we are told of painful uterine contractions producing no effect upon the cervix and generally dispelled by an aperient. Most physicians would, we think, call this kind of pain "intestinal colic." So far as this chapter is concerned, the great paper of Braxton Hicks, on the condition of the uterus in obstructed labour, and the two papers, admirable in their precision and lucidity, by Matthews Duncan, which are contained in vol. xxviii of the *Transactions of the Obstetrical Society of London*, might never have been written. But we have criticized enough. The book as a whole is one of which the authors may be proud.

THE *EXTRA-PHARMACOPOEIA*.

It is not far off thirty years since the *Extra-Pharmacopoeia*[4] was first published, and the fourteenth edition, whose authors are Mr. Harrison Martindale and Dr. Wynn Westcott, has now been published. It is a considerably larger volume than its predecessors, but still of a very handy kind. All the features which have made this reference book so useful and have secured for it so great a popularity in the past have been preserved, and its enlargement seems to have been mainly due to the fact that since the date of publication of the thirteenth edition, a little more than two years ago, appeal has been made to the medical public on behalf of a great many new products, and in this volume receive attention. In the case of a book of this character it is only by its constant use that any errors or omissions become visible, so it is impossible to state positively how far this new edition of the *Extra-Pharmacopoeia* will meet every need which it may fairly be expected to fulfil. But on this point it may be said that each predecessor has been a daily companion during its currency and rarely has been found lacking; the probability, therefore, of the new edition proving an equally faithful assistant in medical work of all kinds is very great. In addition the book emerged practically scathless from an evening spent in dipping into its contents, the only omission noted being the absence of any explanation from the list of abbreviations of two letters frequently apposed to preparations described in the text. A good many formulae recently devised for use in connexion with clinical laboratory work were found to have been given a place and an immense amount of miscellaneous information on all subjects connected with the practice of medicine. Indeed, the weak point of the book, so far as it can be said to have one at all, is the extent of the ground which the authors attempt to cover, and actually succeed in covering more or less completely. For one reason and another it may be concluded that they are enthusiasts on the subject of vaccine-therapy, and in the preface there are some statements regarding that method of treatment which read somewhat quaintly in a reference book otherwise of so entirely scientific a character.

GERMAN CLIMATOLOGY.

Just as a book on modern pharmaceutics requires the skill and experience of the chemist as well as the pharmacologist, so a book on modern "climatics" should be built up by a meteorologist statistician in conjunction with the balneologist. The book which we have before us, entitled German Climatics,[5] is constructed in such a manner, and being compiled with care, on the basis of sound knowledge, the authors have succeeded in laying before a wide circle of readers a work which is full of interest and instruction. The medical man is apt to regard climatology as a subject which requires but little attention and which can be summarily classified into the bad effects of bad climates and the good effects of good climates. Tables setting forth averages, discussions dealing with the significance of means and extremes, and deductions drawn from a consideration of the types of climate would seem dry reading to the average medical man, but the authors have demonstrated in a practical manner that this material can be rendered interesting and useful. The book does not limit its sphere, as the title would suggest, to German climatic conditions alone, but deals with types of climate in all parts of the globe. The first part concerns itself with climate and its constituent factors. Temperature, moisture, sunshine, cloud and fog, atmospheric pressure, and wind and impurities of the air are analysed from a statistical point of view and valuable pieces of information can be gleaned from this part. Following it, two chapters illuminate the subject from the physiological and pathological side. The action of climate on human beings and on the various organs forms the subject of the one chapter, while the effect of certain climates on persons suffering from types of diseases forms the basis of the other. The fourth chapter takes the shape of tables of diseases, and of the spas and watering places where they can be treated with advantage, and, conversely, the names of the spas and watering places with the characteristics of the climate and springs. Excellent maps complete a very well compiled book. The literary style of the writing is good, and all exaggerations which are so common in German scientific books are rigidly avoided.

OBESITY.

The second edition of Professor von Noorden's monograph on obesity forms part of Professor Hermann Nothnagel's system of medicine.[6] It has been completely revised, and contains a great deal more matter than the first edition, which was translated into English and published in 1903.[7] The metabolic problems concerned are briefly summarized, but may be found at greater length in the English edition of Professor von Noorden's *Metabolism and Practical Medicine*. He divides obesity into exogenous and endogenous, the former due to overfeeding and the latter to constitutional causes, and obviously the more difficult to explain and to treat. Professor von Noorden believes that hypothyroidism is the most important functional derangement underlying it, but it is associated with deficient activity of other glands, for example, the pancreas, the pineal gland, the pituitary body, and the sexual glands. It is undoubtedly hereditary, and is distinctly more common in certain races, among which the Hebrew race is perhaps the chief. At the same time, he recognizes the influence of habits and of diseases such as those that affect the organs of locomotion, anaemia, heart and lung disease. Its relationship to diabetes of a certain type is well known, and he explains both as dependent upon an inability to consume sugar; in the first stage the unburnt sugar is stored as fat, and later on when the fat-forming capacity has reached its limit, superfluous sugar is excreted in the urine. The book contains detailed accounts of the various methods of cure. The author recognizes the great advantage of treatment in a sanatorium, where the patient learns how to conduct his diet and his mode of life, so that when he returns home he has acquired habits which it rests with him to maintain; these patients, however, require to return year after year for a course of treatment. The book is completed by a full bibliography of the subject.

"QUEER STORIES."

The "Queer Story" in *Truth* has always been worth reading, either for its plot or for the sake of the surprise one has learnt to look for almost instinctively at the end. Apart, however, from the interest attached to the story itself, its subject matter frequently is very interesting for

[4] *The Extra-Pharmacopoeia of Martindale and Westcott.* Revised by W. Harrison Martindale, Ph.D., F.C.S., and W. Wynn Westcott, M.B.Lond., D.P.H. Fourteenth edition. London: H. K. Lewis. (Pott 8vo, pp. 1054. Price 12s. net.)

[5] *Deutsche Klimatik: Grundriss der Lehre von den Luftkuren Erholungsbedürftiger und Kranker.* By Professor Dr. phil. Karl Dove and Privatdozent Dr. med. Frankenhäuser. Berlin: Dietrich Reimer. 1910. (Royal 8vo, pp. 292; tables and 4 maps. 8s.)

[6] *Die Fettsucht.* Von Professor Dr. C. von Noorden. Zweite Auflage. Spezielle Pathologie und Therapie, herausgegeben von Hofrat Professor Dr. Hermann Nothnagel. Wien und Leipzig: Alfred Hoelder. 1910. (Dbl. cr. 8vo, pp. 265.)

[7] British Medical Journal, April 16th, 1904, p. 897.

another reason. The stories in *Truth* with few exceptions are extremely modern, and deal almost exclusively with the different phases of life in the twentieth century. Even when the scene is laid in other times or in another country, the tale often serves merely as an excuse for rendering all the more effective a sly hit at one or other of the thousand and one fads and crazes of the present day. This is palpably the case with regard to "Ye Fleas and ye Fayth-healers," which is included in the sixteenth series of *Queer Stories from Truth*, recently published in book form.[8] This story, which is the best amongst the thirty which make up the volume, is a clever skit on faith-healing, ostensibly as it was practised in the reign of Charles II, but equally applicable to our own enlightened days. It is perhaps hardly fair to describe in detail the plot of this amusing little tale, which is, after all, a very slight one. It is only an account of a trick played by Charles in order to rid his Court of a troop of faith-healers, whose folly and arrogance had aroused even that languid monarch to action. But, slight as it is, the story is extremely funny, the contrast between the sceptical king and the unctuous healer being drawn with considerable skill; whilst the quaint travesty of seventeenth century spelling seems to give point to Charles's wit, and render all the more amusing the parrot-like formula of his unfortunate victim.

The rest of the book does not come up to the standard of "Ye Fleas and ye Fayth-healers," though many of the stories are very good. There is enough variety in the collection to suit all tastes, for it is made up of many different kinds of fiction. Amongst the tragic stories, "The White Feather" and "At the Outpost" are undoubtedly the best, whilst "The Last Test Match"—a pretty little sketch of the death of a little street Arab in the Poplar Hospital—might almost be placed at the head of those whose leading note is a mild pathos. The humorous stories, of course, preponderate; in fact, they form fully one-half of the whole collection. They differ so widely that it is somewhat difficult to judge their varying merits; but, whilst a fair proportion deal with betting and the turf, and therefore appeal only to a limited circle of readers, there are many others of a different stamp and of a decidedly higher class of humour. One of the best of these latter is "The Old Adam," a rowing story, in which a mild old clergyman converts the black sheep of his parish by his picturesque and variegated language when coaching the Oxford crew for the 'Varsity race, a conversion which all his preaching and good example have hitherto failed to accomplish. "The Kaiser's Wire," in which the German Emperor plays his favourite part of *deus ex machinâ*, is another good story. "Mrs. Pringle-Sharp's Bracelet" has a somewhat unusual plot, for the two clients who have each separately employed the same private inquiry agent to discover the whereabouts of a valuable piece of jewellery, have the satisfaction of seeing it pocketed by the said agent himself—"in the interests of public virtue," as he tells them. It is Lafontaine's fable of the lawyers and the oysters in a new setting, though here the clients do not even get the shells.

Altogether this year's assortment of *Queer Stories* ought to prove an excellent book for the holidays, especially for those who like their fiction in small doses and who do not yearn after the sensational or uncommon. The volume is well printed, and of a convenient size and weight for travelling. Readers of the Sixteenth Series will find it fully upholds the reputation earned by its predecessors in former years.

NOTES ON BOOKS.

IT is somewhat of a feat to reduce to vest-pocket size the contents of the current edition of an official pharmacopoeia, but it would appear to have been achieved to all intents and purposes by Mr. WIPPELL GADD in his *Synopsis of the British Pharmacopoeia*.[9] The edition under consideration is the seventh, this circumstance in itself offering good evidence of the utility of this little book. Though there has been no occasion to alter the matter relating to the *Pharmacopoeia* itself, the opportunity has been taken of revising the section relating to poisons so as to bring it into line with the Pharmacy Act of 1908. Every part of the *Pharmacopoeia* appears to have received due attention, the tabular synopses including the names, main characteristics and doses of each official preparation coupled with a few additional notes concerning it. In his preparation of the synopsis Mr. Gadd, who is a barrister and former lecturer on pharmacy, has had the assistance of Mr. C. G. Moor, public analyst for Dorsetshire, and the whole information contained is both clearly and succinctly stated.

The Pocket Clinical Guide, by Dr. JAMES BURNET,[10] deals in the briefest possible manner with simple laboratory tests. It is designed to be a guide to students, but it cannot be recommended as such. The details of technique are not described in sufficient detail to be of much use to the student who is not already familiar with them. We give a few examples of the numerous errors, which are inexcusable in a book which is designed to be the constant companion of the modern student. In describing the iron reaction for diacetic acid there is no mention of the preliminary phosphate precipitation, and the statement is made that the port-wine coloration disappears on heating. Hopkins's method for the determination of uric acid is inaccurately described; ammonium sulphate solution should be used for washing the precipitate, as ammonium chloride affects the subsequent titration with permanganate. The student is advised to attempt the isolation of the typhoid bacillus from the urine by means of centrifugalization and examination of a hanging-drop preparation of the sediment. Blood-counting technique is inadequately described, there being no mention of Newton's rings or of the necessity for obtaining a uniform distribution of cells over the field. The chapter on stomach contents is of little value. Finally, as a test for blood in the faeces, the author advises Teichmann's test, which has long been recognized as absolutely useless for this purpose.

Of the third edition of *Physical Diagnosis*,[11] by Dr. R. C. CABOT, we said that the arrangement of the matter, the excellent illustrations, and the soundness of the teaching would commend the book to every student desiring a full knowledge and clear understanding of clinical phenomena. The same observations may emphatically be made of a fourth edition now published. In regard to auscultation, the author does well to draw attention to the use of the unaided ear—a method of examination often entirely overlooked nowadays. High-pitched sounds such as those produced by deep-seated areas of solidified lung, and in some cases of aortic insufficiency, may often be detected by the naked ear when inaudible by the stethoscope. In describing friction-auscultation it is usefully pointed out that the line of percussion must neither approach nor recede from the chest-piece of the stethoscope; in other words, the line percussed must be a segment of a circle of which the chest-piece is the centre.

Mr. C. W. JOHNSON has discovered that "in individual mentation some things receive too much and others too little attention." The "individual mentation" of the medical profession being what it is, some aspects of the problem of health have received a great deal too much and others far too little attention, with very shocking results. In his brochure, *Health Physical and Mental*,[12] Mr. Johnson proposes to lead us up to heights of speculation from which we can survey the whole matter in a true perspective. The title-page does not inform us as to the author's qualifications for this task, and the *Medical Directory* also fails to throw any light on this subject, but his little book is quite incapable of doing any mischief.

Professor C. L. GREENE, of the University of Minnesota, made a very successful appeal both to students and practitioners when he first brought out his volume on *Medical Diagnosis*[13] some three years ago, and the third edition of the work seems fully entitled to the same welcome. On every page there is evidence of extreme care in the selection of methods of diagnosis, in their

[8] *Queer Stories from Truth.* Sixteenth series. Published at *Truth* Office, 10, Bolt Court, Fleet Street, London, E.C. (Pp. 244.)

[9] *Synopsis of the British Pharmacopoeia.* By H. Wippell Gadd; with analytical notes and suggested standards by G. C. Moor, M.A., F.I.C. Seventh edition. London: Baillière, Tindall, and Cox.

[10] *The Pocket Clinical Guide.* By James Burnet, M.A., M.D., M.R.C.P.E. Edinburgh: John Currie. (Demy 32mo, pp. 127, figs. 11. 1s. 6d.)

[11] *Physical Diagnosis.* By R. C. Cabot, M.D. Fourth edition. London: Baillière, Tindall, and Cox. 1910. (Demy 8vo, pp. 602; 5 plates and 240 figs. 15s.)

[12] *Health, Physical and Mental, or Hygiene of Body and Mind.* By C. W. Johnson. London: The Theosophical Publishing Society. 1909. (Cr. 8vo, pp. 143. 2s.)

[13] *Medical Diagnosis.* By C. L. Greene, M.D. Third edition. London: Rebman, Limited. 1910. (Demy 8vo, pp. 734. 15s.)

description, and in the fashions adopted for bringing points of special importance into prominence. The book is a mine of information as to both clinical and laboratory methods of diagnosis, and as to their correct application to individual diseases and morbid conditions as a whole. It is freely illustrated by woodcuts, plates, and some coloured pictures, and though many of these are much smaller than usual they are not less informing. Long as is the index, it fails to draw attention to several important pieces of information to be found in the text.

The Modern Mother,[14] by Dr. H. LAING GORDON, is described by the author as "a guide to girlhood, motherhood, and infancy," and we have no hesitation in saying that it is a thoroughly reliable guide. Dr. Gordon's experience has fitted him for his task, and he has covered the ground very thoroughly. The necessary allusions to sexual matters are made with delicacy and discretion, and if there is a tendency to the inculcation of "counsels of perfection," the practical advice given on personal hygiene, management of infants, etc., is otherwise admirable.

[14] *The Modern Mother: A Guide to Girlhood, Motherhood, and Infancy.* By H. Laing Gordon, M.D. London: T. Werner Laurie. 1909. (Demy 8vo, pp. 278; illustrated. 6s.)

MEDICAL AND SURGICAL APPLIANCES.

A Colour Perception Spectrometer.

AT the present moment the whole question of the methods which should be used to examine railway employees and seamen for colour blindness is, to use a hackneyed phrase, in the melting pot. The case of Mr. Trattles and of others has at last drawn the attention of the Board of Trade to the fact that the methods they employ are far from perfect. For years the value of the tests employed both by the Board of Trade and by our railway companies have been criticised not only in this JOURNAL, but also in America and on the Continent, and for years the old inadequate methods have held sway. At last the lay press has taken the matter up, and a committee has been formed to investigate the whole matter.

In a recent paper (*Glasgow Medical Journal*, June, 1910) Dr. Freeland Fergus has laid down the essential optical attributes of a seaman, and, we may add, of the railway man. He must be able in all conditions of weather to identify a masthead light, a port light, and a starboard light. If he shows the *slightest hesitation* he is a danger to navigation. This, then, being admitted it is obvious that he should be tested not with bits of coloured glass, skeins of coloured wool, or coloured cards, but with coloured lights. The Edridge-Green colour perception lamp, equipped with neutral trial glasses to simulate fog and to detect a shortened spectrum, is a suitable lamp for the ordinary tests. Should the candidate fail he can then be tested with pure spectral light. Dr. Edridge-Green has invented for this examination a colour perception spectrometer, which is made by Adam Hilger, Limited, 75A, Camden Road, N.W. The instrument enables the examiner to expose a portion of the spectrum between any two desired wave lengths. It consists of a spectroscope with an adjustable slit and a telescope which contains two adjustable shutters with vertical edges. These shutters can be moved by two micrometer screws each furnished with a drum. Each drum has an index, and is engraved in such a manner that the reading gives the position in the spectrum of the corresponding shutter in wave lengths. The instrument is illuminated by a small oil lamp. Its extreme value is obvious. The candidate can be shown the first part of the red end of the spectrum. He may state that he sees no light at all. Then it is quite obvious that he has a shortened spectrum, and he is at once rejected, no matter what other tests he may pass. He can be shown red or green, and have no possible means of guessing which colour is being exhibited. The instrument enables the neutral patch in dichromics to be accurately mapped out, and all the monochromatic patches can be isolated with ease. We commend the instrument to the Board of Trade as being most suitable for the re-examination of rejected candidates.

THE medical tour organized by the German Central Committee this year will start from Stuttgart on September 1st, and visit Ragaz, Flims, Davos, Vulpera, Tarasp, St. Moritz, Zuoz, Pontresina, Sils-Maria, Lugano, Montreux, Caux, Glion, Leysin, Evian, Interlaken, and Bern, ending at Freiburg in Baden on September 19th. Applications must be made not later than August 20th. The head quarters of the Committee are at 134B, Potsdamerstrasse, Berlin, W. The general secretary is Dr. A. Oliven.

Nova et Vetera.

SOME ROYAL DEATH-BEDS.

(Continued from p. 149.)

WILLIAM III.

WILLIAM III survived Queen Mary about eight years. He had suffered from ague, and had long been tormented by asthma and racked by cough. In 1697, on returning after the ratification of the treaty of Ryswick, he felt ill, and sent for Radcliffe—a proof that he, at least, did not believe that his wife's death was due to the doctor's want of skill. Radcliffe found him suffering from dropsy. He is said to have found the King reading Sir R. L'Estrange's new version of *Æsop's Fables*.[1] After a little preliminary conversation, the doctor requested His Majesty to allow him to look at the book he was reading. Upon opening the volume, the doctor read to the king the following fable, in these words:

"Pray Sir How d'ye Find yourself?" says the Dr. to his Patient. "Why truly," says the Patient; "I have had a Violent Sweat." "Oh the Best Sign in the world" quoth the Dr. And then in a little while after he is at it again, with a "Pray How d'ye find your Body?" "Alas,' says the T'other, "I have just now such a Terrible Fit of Horror and Shaking upon me!" "Why this is all as it should be," says the Physician. "It shews a Mighty Strength of Nature." And then he comes over him a Third time with the same Question again; "Why I am all swelled," says T'other, "as if I had a Dropsy;" "Best of All," quoth the Doctor, and goes his way. Soon after This Comes one of the Sick Man's Friends to him with the same Question, how he felt himselfe; "Why, truly so Well," says he, "that I am e'en ready to Dye of I know not how many Good signs and Tokens." "May it please your Majesty," says Radcliffe, "yours and the sick man's case is the very same." He advised the king to go abroad, and upon his return Dr. Radcliffe was sent for again. In reply to some questions put by the doctor, the king, showing his swollen ankles, which formed a striking contrast with the rest of his emaciated body, asked what he thought of them. "Why, truly," said the physician, "I would not have your Majesty's two legs for your three kingdoms." Radcliffe also told the king bluntly that his juices were all vitiated, his whole mass of blood corrupted, and the nutriment for the most part turned to water. He is said to have added:

> If your Majesty will forbear making long visits to the Earl of Bradford (with whom the King was wont to drink very hard) I'll engage to make you live three or four years longer, but beyond that time no physic can protract your Majesty's Existence.[2]

The prognosis thus roughly conveyed was verified almost to the letter, for the King died in 1702. In 1701 he had been accompanied to Holland by his Dutch physician, Bidloo, whose treatment of his royal patient gave rise to criticism.

In addition to other infirmities under which the King laboured he was troubled with boils that formed in various parts of his body; and for these Bidloo directed that his feet and legs should be rubbed night and morning with flannel covered with powder of crab's eyes, flour, and cummin seed. As to diet, the Doctor was exceedingly indulgent, allowing His Majesty to drink cider, ale—in short, all sorts of strong beer; and to take crude aliments before going to bed. It was in vain that Drs. Hutton, Millington, Blakemore, and Lawrence remonstrated. On the King's return to Hampton Court the dropsical swelling of the inferior extremities extended upwards, for which Bidloo prescribed a vapour bath and enclosed the legs of the patient in a wooden box constructed for that purpose.[3]

William felt so much anxiety about his health that he consulted by letter all the most eminent physicians of Europe; and, fearing that they would prophesy smooth things if they knew who the patient was, he wrote under feigned names. To Fagon, Louis XIV's physician, he described himself as a parish priest. Fagon replied that such symptoms could have only one meaning, and that the only advice which he had to give was that the sick man should prepare himself for death. Having obtained this plain answer, the king consulted Fagon again without disguise; the doctor prescribed some medicines which

[1] *Fables of Æsop.* By Sir Roger L'Estrange, Kt. London 1692.
[2] *The Goldheaded Cane*, by Dr. Macmichael
[3] Ibid.

were thought to have helped to prolong his life for a little time. In a constitution so undermined by disease any accident was likely to have serious consequences. Before long the accident occurred. On February 20th, 1702, as Macaulay says, the King was ambling on a favourite horse, named Sorrel, through the park at Hampton Court. He urged his horse to a gallop just at a spot where a mole had been at work. The horse stumbled and the King was thrown, his right collar-bone being fractured near the acromion. The French surgeon, Roujat, was at hand. But when he wished to bleed the King he could not do so, as the sanction not only of some of the Court physicians but of the Privy Council was necessary before the simple operation could be performed. The injury in itself was not serious. Burnet, however, says that the King all that winter felt that he was sinking; both before and after the accident he said to the Earl of Portland that he was a dead man. "It was not in his legs nor now in his collar-bone that he felt himself ill, but all was decayed within so that he believed he should not be able to go through the fatigue of another campaign." The King himself, with the disregard for medical advice which is a characteristic of royalty, insisted on returning to Kensington. There Roujat's diagnosis was disputed by Bidloo, who at first denied that there was a fracture. On this point the Dutchman seems to have been obliged to give way, and as the jolting of the rough roads made a further reduction necessary, he claimed the right of applying the bandages. This was disputed by Roujat, who is reported to have argued with irresistible logic, but in very bad French: "You are here either in the character of a physician or in that of a surgeon. If the former, you have nothing to do with the business; if the latter, *c'est moi qui* est *le premier chirurgien du Roi*." On March 1st the King's knee became inflamed. On the 3rd he had a short fit of ague which he regarded so little that he said nothing about it; he had another next day. Burnet, who happened to be near him, observed such a visible alteration as gave the Bishop "a very ill opinion of his condition." The next day his strength failed. On the 6th he was so low that he was kept alive only by cordials. He said to those about him: "I am drawing fast towards my end." He received the Sacrament. To his physicians he returned his thanks: "I know," he said, "that you have done all that skill and learning could do for me; but the case is beyond your art and I submit." He could do nothing else, for he was face to face with that pale spectre which strikes with impartial foot the hovels of the poor and the palaces of kings.

> Et la garde qui veille à la barrière du Louvre
> N'en défend pas nos rois.

When the king could scarcely breathe he asked his physicians if this could last long, and was told that death was very near. He swallowed a cordial and asked for his closest friend, Bentinck. These were his last articulate words. He passed away early in the morning of Sunday, March 8th, in the fifty-second year of his age and the fourteenth of his reign.

The following is the report of "the Physicians and Surgeons commanded to assist at the dissecting of the Body of His Late Majesty at Kensington, March 10th, 1702. From the Original delivered to the Right honorable the Privy Council. London. Printed for John Nutt, near Stationers' Hall, 1702."

The Right Honorable the Lord Chamberlain issued out his summons to such Physicians and Surgeons as his Lordship thought fit, appointing them to meet at Kensington and there to examine by Dissection into the State and condition of the Royal Body. The day after the Dissection, the said Physicians and Surgeons being met together again in order to the forming an account of what they had observed, Sir Thomas Millington, Sir Richard Blackmore and Doctor Hannes were deputed as a Committee to draw up the Report.

1. Upon viewing the Body, before Dissection, the following appearances were remarkable. The Body in general was much emaciated. Both the leggs up to the knees and a little higher, as also the Right Hand and Arm as far as the Elbow were considerably swell'd. There was likewise on the Left Thigh near the Hip. a Bladder full as big as a small Pullet's egg, resembling a Blane.

2. Upon opening the Belly, the Gutts were found of a livid Colour; and the Blood contain'd in their vessels black. The Gutt called Ileon had in some places the marks of a slight Inflammation. The Stomach, Pancreas, Mesentery, Liver, Gall-bladder, Spleen and Kidneys were all found and without fault.

3. The Thorax or Chest we observed that the Right side of the Lungs adher'd to the Pleura; and the Left, much more. From which upon separation, there issued forth a quantity of purulent or frothy serum. The upper lobe on the Left side of the Lungs and the part of the Pleura next to it were Inflamed to a degree of Mortification. *And this we look upon as the Immediate cause of the King's death.* From the ventricles of the Heart and the greater Blood vessels arising out of them were taken several large tough flesh-like substances of the kind call'd Polypus. The Heart itself was of the smaller size; but firm and strong.

4. Upon laying bare the Right Collarbone, we found it had been broken near the shoulder; and well set. Some extravasated Blood was lodged above and below the Fracture.

5. The Brain was perfectly sound and without any sign of distemper.

6. 'Tis very rare to find a Body with so little Blood, as was seen in this; there being more found in the Lungs than in all the Parts besides put together.

Doctors Present.	*Surgeons Present.*
Sir Richard Blackmore	Mr. Bernard
Sir Theod. Colladon	Mr. Cowper
Dr. Hannes—Doctor Laurence	Mr. Gardner
Doctor Harrel—Sir Tho. Millington	Mr. Roujat
Doctor How—Professor Bidloo	etc.
Doctor Hullen	
etc.	

It is noteworthy that Radcliffe's name is not in this list, and from this and the fact that Roujat does not mention him among the physicians present at the King's death, it may, perhaps, be inferred that his plain speech had lost him the Royal favour.

Roujat, in a letter to a medical friend in Holland, gave an account of William's last illness,[1] of which the following is a translation:

You remember, Sir, that during the two last visits His Majesty paid to Holland, he was more than usually troubled by his habitual complaint, that is to say, asthma, pains in the side and stomach, with blebs and blisters scattered all over the side of the chest and abdomen. These conditions were often accompanied by fever, and by increase in the swelling of the feet, legs, and hips; as also by two other swellings, one on the right hand, the other on the left knee, which spontaneously disappeared; they were, nevertheless, distinguished by their symptoms from those of the feet, legs, and thighs, which were absolutely oedematous, the others being accompanied by heat, redness, and pain.

During the last week of his life William sometimes walked up and down the gallery at Kensington Palace. Roujat continues:

During all that time Mr. Bidloo never left him; he constantly held him by the arm as usual when he walked or stood. When he was seated or in bed, Mr. Bidloo placed and supported the part (the broken collar bone) with a cushion. It was in that gallery and that very day (the Tuesday before the King's death) that he was imprudent enough to cause to be brought to the King not only his large folio treatise on anatomy, but also the trunk of a skeleton in order to show him the bone which was broken . . . wishing to have crowned heads among his pupils. This His Majesty could not bear, but indignantly had everything taken away. Both the book and the skeleton were seen by many persons when they were being brought and when they were being taken away. . . . He (the King) died . . . at a few minutes after eight o'clock on Sunday, March 8th, 17$\frac{01}{02}$, in the arms of Messrs. "Swel, Fremin and Williams" (*sic*) three of his servants. He died seated on the left side of his bed, having on his dressing gown, drawers, stockings and slippers, in the presence of a number of lords, among others the Duke of "Ormont" (Ormond), Somerset, Devonshire, Queensburi (*sic*) Marlboroug, the Earls of Rumei (*sic*), Portland, Jersai (*sic*), Albemarle, Carlile, Silkerque (*sic*), the Keeper of the Seals, and of various prelates, physicians in ordinary and servants on guard, having retained his mental faculties unimpaired to the last moment.

Roujat then cites in full the account of the autopsy given above, and adds:

But to state frankly my opinion as to the cause of the King's death, I believe that he died of dropsy, his blood and animal spirits being exhausted. His delicate constitution, his scorbutic tendency, the bad conformation of his chest, his excesses in the chase, his wrong system of diet, and lastly the sweatings improperly excited, assuredly hastened his end. I will not deny that the fall may have shortened his life.

This document is interesting chiefly as showing the jealousy of the doctors. Roujat was evidently pleased that Bidloo had incurred William's anger for what Queen Victoria would have called his "indiscretion" in attempting to give the King a lesson in anatomy on his royal person. On the other hand, it is a characteristic touch that the famous Dutch anatomist should have been so absorbed in his favourite science as to forget that sovereigns do not like to be reminded that they are mortal. Even ordinary people might reasonably object to an anatomical demonstration with themselves as the subjects.

[1] Lettre de Mr. Roujat, premier Chirurgien de feu Sa Majesté Britannique Guillaume III. Ecrite de Londres à un Médecin de ses amis en Hollande. London, 1703.

INTERNATIONAL CONGRESS ON DISEASES OF OCCUPATION.

In the British Medical Journal of March 19th, p. 730, it was announced that the Second International Congress on Diseases of Occupation would be held in Brussels this year from September 10th–14th. It was there stated that a British International Committee to promote the objects in the Congress had been formed with Sir Clifford Allbutt and Professor Sheridan Delépine as Presidents; Sir Thomas Oliver as President of the Executive Committee; and Drs. W. F. Dearden of Manchester and T. M. Legge of the Home Office, London, as Honorary Secretaries. How active the honorary secretaries have been in obtaining contributions from English experts is shown by the following list:

Question I.

The English Workmen's Compensation Act: With Special Reference to Hernia, Lumbago, Heatstroke, and Caisson Disease. Dr. R. J. Collie, Medical Referee under the Workmen's Compensation Act, Medical Examiner to the London County Council.

Small-pox as an Industrial Accident. Dr. H. E. Corbin, Medical Officer of Health, Stockport.

Question II.

The Function of the Certifying Factory Surgeon. Dr. W. F. Dearden, Honorary Secretary, Association of Certifying Factory Surgeons.

Certificates of Fitness in the Cotton Trade. Dr. A. Glen Park, Certifying Surgeon, Bolton.

Statistical Studies of Phthisis as an Occupational Disease. Dr. T. D. Lister, Consulting Medical Officer to the Royal Exchange Assurance Corporation.

Descriptions of Systems of Medical Service Adopted by Leading British Railway Companies. Dr. J. G. McBride, Medical Inspector to the North-Eastern Railway Company; Dr. T. M. Watts, Medical Officer to the Great Central Railway Company's Employees' Friendly Society; and Dr. W. F. Dearden, on behalf of a number of companies

Question III.

Experience of Ankylostomiasis in Cornwall. Dr. A. E. Boycott, Lecturer on Pathology, Guy's Hospital.

Incidents in the Life-History of Ankylostoma Duodenale. Professor Sir Thomas Oliver.

Question IV.

Glass Worker's Cataract. Dr. W. Robinson, Surgeon to the Sunderland and Durham Eye Infirmary, etc.

Question V.

Caisson Disease. Lieutenant G. C. C. Damant, R.N., H.M.S. *Excellent*, Portsmouth.

Question VI.

Gaseous Poisons: with Special Reference to Hydrogen Arsenide, and Hydrogen Phosphide. Professor John Glaister.

A Contribution to the Study of Aniline Poisoning. Dr. R. Prosser White, Surgeon to the Roburite Explosives Company, etc.; and Dr. A. Sellers, Public Health Laboratory, Manchester.

Some Unusual Features of Lead Poisoning. Professor Sir Thomas Oliver.

Ten Years' Experience of Notification of Lead Poisoning. Dr. T. M. Legge, H.M. Medical Inspector of Factories.

Early Indications of Lead Poisoning. Dr. S. King Alcock, Certifying Surgeon, Burslem, Medical Referee under the Workmen's Compensation Act, etc.

The names of the writers should be sufficient to vouch for the high standard of the matter presented. French, English, German, and Italian are the official languages of the Congress, and each contribution will be printed in the language in which it is written; abstracts in the other three languages will be distributed along with the paper. The businesslike method of sending out printed copies of all papers and abstracts to members before the Congress meets, and of allowing each contributor to expound on his subject for ten minutes when brought up before the Congress, has been adopted.

All the questions taken up by the British experts are important, though probably the most interesting from a national point of view will be that of medical service. Every class of medical supervision and aid adopted in connexion with industrial pursuits in different countries will be explained and discussed from an international standpoint, and a special effort is being made to obtain as much information as possible on the methods adopted on the leading railway systems of the world. To the latter part of the subject eight of our principal railway companies have contributed valuable data. The duties of the certifying surgeon, along with all other national systems of medical inspection, are to be explained and discussed, so that there will be every opportunity for making comparisons, and those of our own legislators who have recently shown so much interest in the Home Office vote will be able to ascertain if our Continental friends have achieved anything more economical than a sixpenny medical examination or a shilling certificate of industrial poisoning. The Congress is being very well supported from this country, a considerable number of certifying surgeons, insurance medical officers, and medical referees having already signified their intention to be present. Forms of application for membership can be obtained from Dr. W. F. Dearden, 15, Salisbury Buildings, Trafford Road, Manchester.

SCIENCE NOTES.

A number of interesting experiments have recently been performed by Studzinski on the physiological action of the blood and the chemical properties of its active substances. Working with dogs, cats, rabbits, and guinea-pigs, he has found that the injection into the vein of one animal of blood obtained directly from an artery of another animal of the same species causes a rise in the blood pressure of the first animal, but this disappears rapidly without causing any trouble. If, however, the blood is taken from a different species of animal there is an almost immediate fall in the blood pressure. This is rapidly followed by symptoms of excitement and then of depression. If blood is taken from the animal in the course of the experiment it is particularly slow to coagulate, and in some cases only does so after two or three days. The symptoms above mentioned are apparently due to cerebral anaemia. They disappear on section of the vagi, and are analogous to those produced by the action of vasodilatine. The animal returns to the normal state as soon as the blood pressure begins to rise again. If defibrinated blood is now used, transferred from one animal to another of the same species, the same symptoms are produced but to a more intense degree, the reason apparently being that in the process of defibrination the red blood corpuscles have undergone more alteration. From this Studzinski concludes that the vasodilatine exists in the red corpuscles, and that it is set at liberty when they are destroyed. It is itself destroyed by exposure to air for several hours; it is soluble in alcohol, and is an organic nitrogenous substance. In sufficiently large doses it is fatal, and a lethal dose can be obtained by using 15 c.cm. of defibrinated blood of a pig, ox, or horse for every kilogram of the dog's weight. Death occurs from heart failure, and on section the heart is found to be extremely dilated.

From physiological experiment it would appear as if the mechanism of the heart in birds was not controlled by the vagus nerve in the same way as in mammals. Divergent results have been obtained by several workers who have dealt with the matter. Such competent observers as R. Wagner, Claude Bernard, and Thébault were unable to obtain arrest of the heart's action by stimulation of the vagus. On the other hand, Couvreux showed that the nerve contained no accelerating fibres. Einbrodt, however, and later Knoll, demonstrated an acceleration on section and a retardation or arrest on stimulation, the retardation, according to Knoll, being evidenced on the ventricle and not on the auricle. Jürgens has again taken up the problem and gives his results in the *Archiv für die gesammte Physiologie* (1909, p. 506). Pigeons furnished the material for his experiments, and he found that section of the vagus did not augment either the force or the number of the contractions of the auricle or of the ventricle. He has shown clearly, however, that the effect of stimulation is to cause a retardation gradually proceeding to stoppage, with at the same time an increase in the amplitude of the contractions. During the arrest of the auricle the ventricle may or may not show automatic contractions. In certain cases there is a decrease instead of an increase in the amplitude of the contractions. The action of the vagus may thus present several variations, and these are further complicated by the variable automatic activity of the ventricle. In a few cases Jürgens believes that accelerator fibres are present in the vagus.

FAITH AND HEALING.

By the Rev. FRANCIS BOYD,
Warden of the Guild of Health, Clifton.

SOME very interesting articles appeared in the BRITISH MEDICAL JOURNAL of June 18th. I have searched your correspondence columns ever since in the hope of seeing something from the "religious" side. In the absence of an abler pen, may an obscure clergyman make a contribution to the discussion? For, after all, the subject matter of the debate lies where the provinces of the doctor and priest overlap; or, rather, it might be truer to say that it lies in a region where doctor and priest face each other across a gap.

The crux of the whole difficulty is that point at which an energy passes from the spiritual to the material. It is a point that has always attracted man, and always baffled him. But we are trying, in our several ways, to approach it now, which is a great advance on denying its existence and throwing stones at each other.

It may be approached from both sides. The theologian or "religious" man starts from God and follows the process, as far as he can, by his own methods, and the medical or scientific man does the same from the opposite end of the chain. A certain amount of progress can be made from either end, but it is the region of the middle links where we all get out of our depth. Psychology is doing excellent work; it has given us real help, and promises more. But we are still far enough from a solution of the difficulty. Meanwhile, it would do no harm if we could get the conditions of the problem clear.

In the presence of a complicated difficulty of this kind, which lies exclusively in no man's land, there is always a temptation to grab a solution by false simplifications. These may be found in this case either in the direction of a material monism, or a spiritual monism. It is not many years ago that the prevailing doctrine in matters of health was a kind of medico-materialistic monism, and there are still, I suppose, numbers of doctors who would deride the very idea of spiritual or mental succours for bodily ailments. Sir Clifford Allbutt can write as he does because he is a man of distinction; but I suspect he is in advance of the general body of medical opinion. And even in his article there are signs of the old naturalism. And by "naturalism" I mean a view of Nature that is one-sided, exclusive, narrow—as narrow as the popular antithetic view of the Grace of God. It regards events as less significant because they are more manifestly inevitable, less "Divine" because they are more regular, less spiritual because they are more frequent. It is as objectionable as the false spiritualism which makes exactly the same distinctions from an opposite point of view, and with an opposite prejudice. Both sets of extremists are wrong. They begin by being intolerant, and end by proving incapable, and for the same reason. Let us frankly abandon both these positions. Some of us must remember that "religious" people do not seek the foundations of faith in the gaps left by science and the opportunities of freedom and Divine action in the interstices of order. And some of us must remember that modern scientific men are not to be identified with that intolerant and exclusive "Naturalism" which, in the best circles of thought, was buried at the end of the last century.

I suggest also that we might avoid false antitheses. Sir Clifford Allbutt, for example, says: "We know . . . that the physical life of a sick man depends, not upon prayer, but upon the timely arrival of the physician with the antidote." But why that contrast? Are the alternatives mutually exclusive? Must I choose between swallowing the antidote and saying my prayers? I know, of course, that there are foolish people who do so choose. There is a one-sided spiritualism which imagines it is more spiritual because it avoids material means; which refuses the sanitary inspector on the ground that "God will provide." That is a caricature of religion which naturally excites the indignation of your correspondents and all other sensible men. But most of us are sane enough to avoid such a choice. We know that spiritual force does not cease to be spiritual when it employs material means; and we ask that the corresponding error on the other side should be avoided—namely, the notion that nothing is a spiritual exhibition of power which does not avoid the production of material results. There is a halting and prudish spiritualism that shrinks from "means," and there is an anti-spiritual temper which trusts to the means, on the ground that they do not belong to God. Are they not both wrong? We do not want any competition between God and the antidote. Is it not God's gift? Has it any virtue save that which God has given to it? Is the spiritual energy discredited because it touches the material scene a little earlier rather than a little later? It is only a matter of the point in the series at which the spiritual force enters. But there is no rivalry save that which is created by a materialism which regards the means as an alternative or substitute for faith.

Nor do I think Sir Clifford Allbutt is justified in restricting prayer to "spiritual gifts." They are indeed the more precious and to be more earnestly sought. But to rule out prayer for material benefits looks like a return to that old idea that religion finds refuge and a sphere of exercise only in those things which are supposed to be outside law, as if you could not pray about those things which were subject to law. But is not everything subject to law, though we do not as yet understand the law in every case? The reign of law does not exclude prayer (which is also a law) any more than it excludes personal freedom. I would rather argue that it is precisely where law is plainest and best understood that freedom and choice become most effective. I believe in spiritual healing, not because it is a breaking of law, but because it *is* a law; and I do not call a cure by spiritual means any more "miraculous," in the magic sense, than a cure by any other means; nor do I think parallel cases any more a disproof of spiritual healing than they are of surgical healing.

I must not strain the hospitality of your columns, and merely offer these rough suggestions as a small contribution to a very difficult question.

SPIRITUAL HEALING AND THE "GUILD OF HEALTH."

By STANLEY BOUSFIELD, M.A., M.D.Cantab.,
London.

THE Guild of Health issues an annual report stating that one of its three objects is "for the restoration to the Church of the Scriptural Practice of Divine Healing," and takes up a definite attitude regarding the "special gift" of spiritual healing, with corresponding claims to healing powers.

The last annual report showed that out of 429 members 351 were ladies and 53 ministers of religion, but no names of medical men appear in the list. It is particularly important to draw attention to this guild as it has at its head as warden a clergyman who also occupies an active position in the Church of England.

Although all such societies tend to increase when once they have obtained a considerable number of members to spread accounts of past "cures," yet a title like the "Guild of Health" appeals strongly to the many men and women who are continually looking out for something novel or fresh for the ailments of themselves and their friends. To obtain as warden a minister of religion must also greatly tend to attract fresh members.

I have kept in touch with a lady, suffering from myasthenia gravis, during the eight years of her illness; and for some time her condition with a quiet restful life had not varied much. But quite recently she joined this guild and was treated for six weeks by the warden, the Rev. Francis Boyd, at Clifton. She writes to me:

> The first time I saw Mr. Boyd I gave him a full account of myself. He hadn't had a myasthenia person before, and he got a doctor's view of the case from a doctor friend of his.

This doctor, however, did not see my patient; but as the result of the faith and hope inspired by the treatment, after the first week she made continual desperate efforts to walk further and exert herself more.

I will give the following extracts from the letters which I received subsequently:

> About coming home, Mr. Boyd had shown me that the thing worked, so he said there was no need for me to stay longer. I went to him every day for six weeks, which was longer than was generally necessary. . . . I wondered if I said pretty clearly why I left Clifton. Mr. Boyd did first suggest the following week for me to leave, but I knew he thought he couldn't do any more and that I might as well leave. . . . At

the end of a week we had a long talk, and that night I determined to make more effort. . . . Then about walking, I was not told at all what I was to do, only I knew he thought I should do a little more each day. . . . I got the strength during the laying on of hands, but I did not have generally any particular feelings at the time. . . . The gift of healing is only given to some.

These extracts are best left without comment, but clearly they prove both the great responsibility assumed in making such promiscuous attempts at healing, and the sort of belief instilled into the members. The obvious impropriety of such treatment for myasthenia gravis makes it unnecessary to add that no "healing" was accomplished.

Recently I was able to refer to the methods of this guild at a conference on spiritual healing, held in the parish room of a city church, when Mr. Boyd was fortunately present. After the meeting Mr. Boyd sought to justify his actions by explaining to me that when possible he always consulted medical men and that he gave no directions to this lady to overexert herself! The sister of this lady tells me that the organizing secretary of this guild wrote to her:

> We don't consider any disease, however incurable it seems, to be beyond the reach of spiritual healing.

On asking Mr. Boyd if he endorsed this statement he replied, "Theoretically, yes; practically, no," which is a somewhat important difference when it is a question of dealing with such a disease as myasthenia gravis.

At this meeting Mr. Boyd finished his speech by remarking that if he chose to carry on spiritual healing he saw no reason why he should not do so. We might be more likely to agree if Mr. Boyd either worked quietly in his capacity as a clergyman, under proper conditions in conjunction with medical men, or else dissociated himself from the Church and openly called himself a spiritual healer. But, while holding a responsible position in the Church of England, to have his name spread broadcast as a spiritual healer, by being warden of this guild, is at variance not only with the example set by our Great Teacher but with the best traditions of the noble profession to which he belongs.

I make the following extracts from a printed publication, issued by the guild and written by its warden, to show the chief tenets of this society:

> I do not think that as a guild we are concerned with theories as to precisely how health is preserved or recovered. . . . Nothing surely could be further from our Lord's mind than to "make a splash" by a thaumaturgical display. The Gospel had no need of the assistance of such methods. Besides, there is not the smallest hint that our Lord ever intended these gifts to be temporary. And also, this "gift" of healing was no "miraculous" gift in the sense of being an arbitrary permission to break natural laws. Healing is the operation of law, not the breaking of it. It is merely an instance of what we see every day—a higher law superseding a lower one. And precisely because it is a law it is not temporary, and under the same conditions the same results must follow to-day. . . . We must conclude, then, that the gift of healing once given is still in the Church, and ought to be used by those who are so called by the Holy Spirit. . . . For practical purposes we treat disease (quite rightly) as an evil thing, proceeding rather from Satan than from God, a thing to be by every means opposed and done away with; and our only regret is that we cannot more successfully and completely abolish the evil thing.

Of course, it is no reply in favour of this guild to quote instances of some of its other cases which have been benefited. Naturally, this would occur with certain illnesses, but does not affect the argument against the whole principle and method of procedure adopted by the guild in its conduct of spiritual healing.

I hope I have said enough to make us give a wide berth to this guild or to any similar society that may spring up in the future. I offer this criticism because such societies can only tend to retard that most desirable greater union of religion and medicine in a combined attempt to help the physical and mental health of mankind. If our profession has been backward in the past in securing the great help often obtainable from ministers of religion, yet the latter should not approve of attracting men and women to undergo "spiritual healing" by their colleagues through the medium of any such society as the Guild of Health.

THE CATHOLIC CHURCH AND THE LOURDES CURES.

By the Right Rev. FRANCIS AIDAN GASQUET, D.D.,

Abbot President of the English Benedictines.

THE articles which have appeared in the BRITISH MEDICAL JOURNAL on "Faith Healing" and the "Lourdes Miracles" seem to call for some remarks from a Catholic standpoint. I welcome this remarkable series of papers, written by the most eminent men of the medical profession, for their spirit of fairness, although they are for the most part written from a strictly rationalistic point of view. As I conceive it, the fundamental difference between the Catholic and the non-Catholic attitude towards "miracles" in general, is in regard to the possibility of such interventions on the part of the Supreme Being. We affirm not only the possibility but the fact that God has wrought miracles on earth all throughout its history and even since the days of the apostles. Whether He has done so or not in any given case is for us merely a question of evidence.

A miracle, as we understand it, is something which is above or contrary to the ordinary known laws of Nature, or something brought about by supernatural agency. We believe not only that God has made the world and established the laws which govern it, but that His Almighty power continues to rule and control it by His direct action upon it. No one who believes in the existence of God can reasonably doubt the possibility of miracles. To question it is to question whether the Supreme Being can depart from the laws which He has established as Maker of heaven and earth. Jean Jacques Rousseau, that typical unbeliever, long ago declared that such a question "would be impious if it were not absurd," and added that "no man ever denied that God *could* work miracles." Renan, too, formulated the same idea when he said that the verse of the Psalmist, *Numquid poterit Deus parare mensam in deserto*, was a fallacy of interrogation, since it was not a question of God's power to feed His people in the desert, but of His *will* to do so.

Miracles, then, to the Catholics are historical facts, and they depend, as all other historical facts, upon the evidence. In his *Apologia* Cardinal Newman points out that Catholics hold that what God has done once He can and indeed is *likely* to do again. On the other hand, those who hold that the age of miracles is past argue that what the Supreme Being had indeed once done He is *not* likely to do again. According, therefore, to his principles, the occurrence of supernatural facts—miracles—does not startle the Catholic. They may or may not have taken place; he may have no distinct evidence; he may suspend his judgement, but he will say, "It is very possible." He will never say, "I cannot believe it."

So much it is necessary to state as to the attitude of mind in which a Catholic approaches the examination of some so-called miraculous event. And, although the fundamental belief that God can and sometimes does work in a miraculous way may dispose him to accept the fact as being supernatural, his actual acceptance is and should be strictly scientific and based upon the evidence. He has to satisfy himself on the three points: (1) Is it antecedently probable? (2) Is it in its nature certainly miraculous? (3) Has it sufficient evidence?

It is difficult to see what objection can be reasonably raised against the attitude of the Catholic Church towards the miraculous. It is entirely judicious, and does not accept mere credulity. In the process of canonization the official rules of evidence leave nothing to be desired, in the opinion of non-Catholic lawyers who have examined them. The supernatural character of facts alleged as miracles is tested by every possible means; the evidence is sifted with minute care, and facts reputed to be miraculous are rejected which do not fully stand the required tests. The principles adopted by the Congregation of Rites in this examination are those laid down by Pope Benedict XIV, and are worth setting forth in some detail.

Four proved miracles are required for Beatification and two more for Canonization. These must be attested by *eye* and not by *ear* witnesses.

For an alleged cure to be received as miraculous, it is requisite (1) that the disease cured must have been of an aggravated nature, difficult or impossible to be cured in

the ordinary way; (2) that the condition of the patient before the cure showed no signs of mending; (3) that no medicine had been used, or that if it had, that it had done no good; (4) that the cure was sudden; (5) that the cure was complete; and (6) that it was permanent. Could the official attitude of the Church towards miracles be more cautious?

Let me take the case of the recovery of a person's sight, which is proposed to the congregation as a miraculous cure. First of all, it has to be proved that the person was born blind, or had become so afterwards under stated circumstances; secondly, the duration of the blindness has to be stated; thirdly, the cure has to be most minutely detailed; fourthly, the written opinions of the best scientific and medical men as to the cause, etc., of the blindness, must be forthcoming; fifthly, it must be shown that it is impossible to refer the cure to known natural causes; sixthly, it is necessary to show that the cure was instantaneous, which is always required in regard to miracles of the first class; seventhly, whenever the physicians and scientific men cannot trace the absolute cause of blindness, no definite judgement is ever given.

Acting strictly on these rules, a great number of alleged miracles are absolutely rejected in the process of examination into the sanctity of some eminent servant of God. For example, in the case of St. Peter Fournier, the miraculous character of several cures supposed to be wrought through his help was denied, because they were not instantaneous and because it was not shown that the cure could not have been effected by natural causes. In the case of St. Stanislaus, the instantaneous stoppage of a haemorrhage, which was adduced as a cure through his intercession, was not allowed to be miraculous, because, according to the laws of the science of medicine, so much blood had been lost by the patient that he ought to have died before the saint was invoked. Out of nine facts adduced as miraculous in the cause of St. Camillus two only were allowed. This may, I think, be taken as sufficient evidence of the stringent and scientific way in which any question of the miraculous is approached by the Catholic Church.

What is true of the attitude of the authorities of the Roman Congregation towards alleged miraculous facts is true in regard to what are known as "Lourdes miracles." The utmost care is taken to examine into each case; to secure the full medical history of the patient; and, as far as possible, to follow the course of events subsequent to the alleged cure. In the majority of cases cured at Lourdes it is admitted that the relief from suffering or the restoration of health is due to the influence of mind over body, or as we prefer to call it, to the religious influences of the place, including of course the result of a belief in the intercession of the Blessed Mother of God to obtain the cure of the sufferer. That such a cure, which could not, or was not able to be obtained otherwise, did in fact take place under such influences, is surely sufficient to claim that it is a grace, a providence, a manifestation wrought by the *ethos* of the place and by the deep religious feelings called forth in the mind by it. To attribute it to the influence of the Blessed Lady of the shrine is at least as reasonable as to speak of cures wrought by the suggestions and influences of Dr. X., or Professor Z, as effected by them.

Generally speaking, cures such as these at Lourdes are granted to faith and prayer, and for this reason, in places where faith and prayer abound, they are more likely to occur than where and when faith and prayer are not. "Further," writes Newman, "as faith and prayer obtain miracles, so still more commonly do they gain from above the ordinary interventions of Providence; and as it is often very difficult to distinguish between a providence and a miracle, and there will be more providences than miracles, hence it will happen that many occurrences will be called miraculous which strictly speaking are not such, and not more than providential mercies, or what are called 'graces' or favours."

It is this which is so well exemplified at Lourdes. The mere "action of mind on body" does not fully account for what we there find. It is a matter of everyday experience that many arrive with the confident expectation of obtaining relief who in the result receive no material benefit; whilst, on the other hand, there are many instances of persons who have been actually cured who had no hope of being so, and who had come simply to satisfy the importunity of friends. To explain this I may perhaps be allowed to adopt the words of my brother, the late Dr. J. R. Gasquet, who for some weeks in the year 1894 studied the cures at Lourdes, together with Dr. Boissarie, in the Bureau des Constatations Médicales, where all the cases are examined and the evidence sifted. He says: "To say there is nothing remarkable about them, and that they are simply instances of suggestion carried out on a large scale, is merely to provoke the retort: 'Why, then, do you not treat your own patients with equal success?' . . . I do not believe that this, that is, formal hypnotic suggestion, is the whole account of the matter. I believe that contact with the supernatural, not only at Lourdes, but in every place where men call for the help of their Creator, may produce much greater effects than ordinary suggestion or auto-suggestion can accomplish. Such effects would be produced through the influence of the mind on the body; and no argument could be based on individual cases, each of which might be paralleled among instances admitted natural. But if the environment of patients visiting Lourdes be borne in mind, it will appear very improbable that the kind and degree of suggestion existing there should produce so many complete and permanent cures, even of purely nervous ailments. Nor will this seem antecedently unlikely to theists, who will be prepared to admit that prayer has a superhuman efficacy to change and renew the moral and spiritual nature of man. Those who grant so much will hardly think it unreasonable to believe that such an action may sometimes overflow into the body, which they know to be so intimately connected with the mind."[1]

But besides the cures, which to a greater or less extent may be considered as brought about by the action of the mind on the body, there are a great number of cases which cannot be explained in this way, at least in the present state of medical and physical science. In all his experience at Salpêtrière, Professor Charcot, when he looked for cures to parallel those recorded at Lourdes, had to confess that he could find none in his vast clinic. Instances of such cases may be found in all the books dealing with Lourdes from the point of view of the cures. Dr. Boissarie, whose skill and honesty cannot be doubted, has given a large mass of medical testimony which may be tested by any one interested in these matters. The case of one Gabriel Gargam, set forth in a volume entitled, *Lourdes: a History of its Apparitions and Cures*, by Georges Bertrin (Kegan Paul, 1908), is one that can be easily verified with very little trouble. Briefly the case is as follows: On December 17th, 1899, Gargam was seriously injured in a railway accident. The Orleans Railway Company being sued for damages, a medical report of December 19th, 1900, declared that the injury "constituted a permanent infirmity, hardly susceptible of improvement, and more likely to terminate fatally." Later a further complication ensued, and gangrene of the feet declared itself. The suit against the company was still pending, and the doctors employed by the Orleans Railway, having seen Gargam, advised the company to offer him a pension of 3,000 francs. The civil courts on February 20th, 1901, characterized the offer as "ridiculous in view of the lamentable condition of the patient," and condemned the railway company to pay him an annual pension of 6,000 francs for life, and an indemnity of 60,000 francs.

The civil courts thus recognized the fact that Gargam was a hopeless invalid for life. The agent of the company went still further, and, having visited the patient and examined the medical reports, advised the railway authorities to offer a payment of 12,000 francs annually in place of the 60,000 francs indemnity, since "Gargam was certain to die soon."

The company refused to pay anything and appealed to the Bordeaux courts, which, however, not only decided in favour of the injured man, but ordered the arrears of pension from the day of the accident to be paid to him. So far the whole medical history of the case had been examined and re-examined in the most public manner possible. Growing worse daily, Gargam was finally persuaded by his friends to allow himself to be carried to Lourdes, at the time of the national pilgrimage, although for years he had not been a practising Catholic and made no secret of his want of faith. For more than

[1] *Studies: The Cures at Lourdes*, p. 322.

eighteen months he had not left his bed at the hospital; the lower portion of his body was as good as dead; he fainted at the least movement, and could only be fed with difficulty by an oesophageal tube. In what was to all appearances a dying condition, Gargam reached Lourdes, and was carried on a stretcher to the shrine. Many of the spectators publicly protested against his being allowed to remain there, as his death in public, which seemed imminent, would have a bad effect on other invalids. Such was the state of the unfortunate man when, during the blessing of the sick by the Blessed Sacrament, he was instantly cured. Immediately after he was taken to the Medical Office to be examined. "His entrance into the office," says Dr. Boissarie, "was one of the most touching sights we ever beheld. Sixty doctors were present, counting hospital surgeons, professors, foreigners; also many representatives of papers, believers and sceptics." The medical examination made the following day proved that M. Gargam was cured, and that although signs of sores recently healed were visible upon the body, the gangrene of the feet had suddenly disappeared. Strength rapidly returned, and to-day M. Gargam frequently spends hours in helping to carry the sick who come to Lourdes in search of relief from their sufferings and maladies at the shrine where he was made whole.

The cure here briefly set forth, and which at the time was told in the columns of the *Daily Mail* by a Jewish eye-witness, may be paralleled by many other similar cases. The publicity, however, of the previous history of the Gargam case, and the fact that the man himself may generally be seen engaged in the work of helping the sick at Lourdes at the present day, makes this a case that can easily be inquired into by anyone who will take the trouble to search into the truth of the facts. Other recorded cases, indeed appear to me to be, if possible, even more extraordinary and incapable of any satisfactory natural explanation. Such would be the instantaneous union of bones, which had long been broken, and the ends of which had remained separated by a considerable distance. Science would, I believe, require a considerable period of time to effect the union, even if after a long period it would allow the possibility of bringing the ends together at all. Also, I fancy, most people would allow that no mental suggestion, however powerful, would avail to effect a radical cure of this kind in a few instants.

In view of the constant progress of scientific knowledge, it is quite possible that it might be necessary to qualify former judgements on cures of this kind. The phrase "as far as we know at present" is always usefully appended to a judgement on these matters. Many things which to our forefathers would have appeared impossible are now shown to have a natural explanation. It is for this reason that the official attitude of the Church towards the miraculous is one of extreme caution, and it is this spirit which prevails at Lourdes. The cures there are certain, and the fullest investigation is welcomed, for to us Catholics, whatever be the explanation of *how* the cure is effected, the supernatural cause is the spirit of the place and the intercession of the Blessed Mother of God.

FAITH HEALING AND MIRACLES.

By the REV. HERBERT THURSTON, S.J.

"OF the miracles of our Lord," says Sir Clifford Allbutt, in his article entitled "Reflections on Faith Healing," "we shall agree that this is not the place to speak." Sir Clifford's motive in counselling this reticence is no doubt one which all will regard with respect, but it is difficult for an advocate of the reality of modern miracles to treat such phenomena altogether apart from what must be held to be their warrant and their prototype in the New Testament. It has been well said by Sir J. R. Seeley in *Ecce Homo:*

> Miracles play so important a part in Christ's scheme, that any theory which would represent them as due entirely to the imagination of His followers or of a later age destroys the credibility of the documents not partially but wholly, and leaves Christ a personage as mythical as Hercules.[1]

[1] *Ecce Homo*, first edition, p. 43, and see this whole chapter on "Christ's Credentials."

There is no documentary theory of the Gospels which can eliminate the element of miracle from the life of our Lord. No modern critic has professed to discover an Ur-Markus or anything of the sort in which we find a portrait of Christ not yet embellished with signs and wonders. Even Professor Adolf Harnack, whom none can accuse of ultra-conservatism, not long since astonished the agnostic world by announcing his belief that the third Gospel was written by Luke the physician, substantially as we have it now, about the year 80, while it is undisputed that several of St. Paul's epistles with their fully developed belief in the Resurrection are considerably older than this. thIardly seems too much to say that Christianity as a moral system is founded on a belief in Christ's miracles. Yet many even of those who take only a philosophical interest in such discussions will shrink from the further conclusion that the moral reformation which Christianity has introduced and the heroism it has engendered were built upon nothing better than a lie.

Strong, then, as our reluctance may be to admit of any departure from the uniformity of Nature's laws, there are not less motives on the other side to lead the thinker who looks back reverently upon the history of the world, and whose own past mistakes have taught him that overconfidence is one of the greatest enemies of all true knowledge, to pause before he passes summary judgement upon the character of alleged miracles of healing. Writing for such an audience as are likely to come across this intrusion into the pages of a professional journal of one who is medically speaking a layman, I am hardly disposed to ask for more than delay. I plead for arrest of judgement. I ask that the medical critic should not, after a perusal of Zola's *Lourdes* on the one hand, or of Huysmans's volume[2] on the other, believe that he has before him the materials for a final conclusion. The wiser philosopher, I submit, will distrust his power of arriving at a safe decision until he is in full possession of the evidence. One recognizes the immense pressure of work and the vast competition of interests in modern conditions of life; but, if I may say it, with all respect for the many eminent authorities who have written of faith healing in the JOURNAL of June 18th, they do not seem to have acquired their information about Lourdes from the best sources. The work of M. Georges Bertrin, for example, *Histoire critique des événements de Lourdes*, which provides much the most satisfactory general account, has not, I think, been mentioned by any one.[3] I might add that the majority of the volumes published about Lourdes, not even excepting those of Dr. Boissarie, the President of the Bureau des Constatations, have been written rather for the edification of Catholics, who already believe, than as a presentment of the case for the scientific and the sceptical. This constitutes a special reason for deprecating a too precipitate judgement. The systematic collection of evidence will, no doubt, be very much aided by the canonical investigations which the bishops have recently been directed to make, but so far the scientific discussion of the facts, hampered as it is by immense difficulties in the matter of certificates, etc., has only been possible in a few of the more striking cures.

I plead, then, that the question of modern miracles be approached in a practical spirit, and I cannot but believe that many members of the medical profession who really retain an open mind must already be profoundly impressed by the element of mystery with which they are so often brought into contact in their observations of disease and its cure. Has any one yet offered a satisfactory explanation of the latter-day prevalence of appendicitis? Are the successes of so many unorthodox systems of treatment, often, it would seem, fundamentally at variance with the teachings of authorized medicine—homoeopathy, for example, or hydropathy, and more particularly the latest comer, osteopathy[4]—quite adequately accounted for? Is any trustworthy analysis available of the causes which underlie the astonishing

[2] *Les foules de Lourdes*, a work marked by all the exaggerations of the artistic temperament.

[3] The excellent English translation of this work by Mrs. Philip Gibbs unfortunately suffers from the omission of valuable notes contained in the original.

[4] Few would credit the developments of osteopathy in America. It appears that the total number of graduates in osteopathic colleges in 1907 was 3,946, as compared with 63 in 1897. In most of the States of the Union they seem to be legally recognized, and quite a number of expensive manuals of osteopathic treatment are now published in that country.

results often attained by so simple a remedy as change of air? When one considers the fashions that have prevailed in drugs, health resorts, dietary, or even clothing, or in methods of treatment like bleeding or massage, all in turn believed in, and justified by irrefutable "facts," one is inclined to wonder—I speak as a layman—whether scientific medicine has not hitherto failed to reach something which is perhaps more fundamental than any of the laws which it has undoubtedly discovered. All, at any rate, will agree that the time has not yet come when the accumulation of data can be neglected, and I venture to urge that the surprising phenomena of such places of pilgrimage as Lourdes have not yet received from the medical profession at large such careful study as they require.

And first, before applying myself directly to the question of "miracles," I would invite the reader's attention for a moment to the phenomena of a quite different kind recorded in a recent volume of the *Proceedings of the Society for Psychical Research*.[5] Just a year ago I was present at a meeting of that society in which the report was read of certain séances not long before conducted at Naples with the famous medium, Eusapia Palladino. Probably the report would not have impressed me so much had I not had personal knowledge of the resolutely sceptical attitude towards such manifestations of the reader of the paper, the Hon. Everard Feilding, one of the secretaries of the society. Not many months earlier I had heard him declare in terms of strong conviction that, after years of experience with mediums, he had never failed to come upon fraud, and that the results of his experiments in this matter had so far been entirely negative. Or, to quote the statement printed in the volume of the *Proceedings* referred to, a statement which must have passed under his own eye:

> Whilst preserving an open mind as to the possibility of the existence of some hitherto unascertained force in Nature whereby the manifestations testified to by so many observers of high standing were produced, the discovery of repeated fraud had produced in him (Mr. Feilding) an attitude of complete scepticism as regards the probability of his ever finding any example of the exercise of such a force.

The investigation had been conducted by three gentlemen—Messrs. Baggalay, Carrington, and Feilding—all of them of large experience in dealing with the fraudulent practices of mediums, all of them hitherto entirely sceptical as to the existence of any phenomena incapable of being explained by trickery, and two of the three adepts in legerdemain.[6] The light during the séances was for the most part sufficiently good to follow any pronounced movement of the medium's head or arms. The most rigorous control of a kind taught by long experience was exercised over the position of Eusapia's hands and feet. The séances were held in Mr. Feilding's own room at the hotel, and the possibility of any intervention of accomplices or of the aid of any prepared mechanical apparatus was put out of the question. Nevertheless, in spite of these and other precautions all the usual manifestations occurred. Tables were levitated, and stools and curtains moved responsive to the medium's gesture. Spectral hands appeared which touched, clasped, and were distinctly felt on many different occasions by each of the three investigators. Noises and lights of all kinds made themselves perceptible; bells, and other such objects which had been left upon the guéridon behind the curtain, sounded of themselves or floated in the air. Nothing could be more puerile than such displays, and nothing more unconvincing than Eusapia's attribution of these phenomena to the spirit of "John King" who was supposed to enter into her in her state of trance. But still if we are to believe human testimony at all, I venture to say that the reader who will take the trouble to work through the extraordinarily minute and candid report which has been published by the investigators, will find himself compelled against his own will to believe that these things actually occurred. The conclusions unanimously arrived at by the investigators referred to will best be given in their own words:

> The question, therefore, seems reduced to a choice between two improbabilities. Either we were constantly thrown into a state of hallucination by means of a mysterious, suggestive influence exercised by Eusapia, for the existence of which, either in her or anybody else, there is otherwise, in our view, no evidence whatever; or, on the other hand, the ordinarily recognized laws of dynamics have to be enlarged by the assumption that there does actually exist some hitherto unascertained force liberated in her presence, and for the existence of which, both in her and certain other persons, the body of evidence is, we think, not inconsiderable.
>
> With great intellectual reluctance, though without much personal doubt as to its justice, we adopt the latter alternative. Making, then, a reservation for the possibility of some kind of hallucinatory influence of such a kind as fundamentally to invalidate the trustworthiness of all evidence, and for the existence of which we believe there is neither warrant nor parallel, we believe that we have witnessed in the presence of Eusapia Palladino the action of some telekinetic force, the nature and origin of which we cannot attempt to specify, through which without the introduction of either accomplices,[7] apparatus, or mere manual dexterity, she is able to produce movements of, and percussive and other sounds in, objects at a distance from her and unconnected with her in any apparent physical manner, and also to produce matter, or the appearance of matter, without any determinable source of supply.[8]

The report of these representatives of our English society might be received with hesitation, in spite of its most impressively thorough character, were it not well known to all interested in such subjects that many of the most eminent psychologists and men of science upon the Continent have taken part in other séances with the same medium, and have in almost every case been convinced of the genuineness of the phenomena produced. Professor Cesare Lombroso, whose fame as a specialist in criminal anthropology is world-wide, was one of the first (that is, in 1891) to make public profession of his belief in Eusapia. Professor Tamburini, who took part in the same set of experiments, made some qualifications, as also at a later date did Professor Richet; but even they admitted, if I may use Professor Richet's words, that, "absurd and unsatisfactory though they were, it seems to me very difficult to attribute the phenomena produced to deception conscious or unconscious or to a series of deceptions." Monsieur and Madame Curie, the discoverers of radium, took the greatest interest in the experiments with Eusapia, and were very much impressed by her. At the Milan séances a committee consisting largely of professors and physicists, and including such men as Professor Schiaparelli, the director of the Milan Observatory, declared by their official report, in reference more especially to the appearance of a hand:

> It is impossible to count the number of times that that hand appeared and was touched by one of us; suffice it to say that doubt was no longer possible; it was, indeed, a living human hand which we saw and touched, while at the same time the bust and arms of the medium remained visible, and her hands were held by those on either side of her.[9]

Of English investigators, Sir Oliver Lodge, Sir William Crookes, Mr. Frederic Myers, and, with some qualifications, Professor Henry Sidgwick and Mrs. Sidgwick, have all declared that there seemed no way of accounting for the phenomena except by supranormal means. No doubt, in certain séances at Cambridge, Eusapia was plainly detected in fraudulent practices; but this, while thoroughly well known, and while rendering the watchfulness of those who observe her more minute, has not impaired the conviction of those who have had adequate opportunities of testing all the phenomena that the majority of them are genuine. M. C. Flammarion, the astronomer, in his *Forces Naturelles Inconnues*, 1907, and Dr. Enrico Morselli, the Professor of Pathology in the University of Genoa, in his two volumes entitled *Psicologia e Spiritismo*, 1907, have both made Eusapia the centre of all their investigations, and have pronounced unhesitatingly in favour of her possession of some faculty hitherto unknown and unexplained. It is not an exaggeration to say that

> The opinion of practically all the scientific men [and they include many of the most eminent names in Europe in the domain of psychology] and others who have given any attention by personal experiment to the subject, is that after making every allowance for such fraud as she may occasionally permit herself to indulge in, Eusapia is nevertheless possessed of faculties of some supranormal kind.[10]

Eusapia Palladino is not, of course, the only medium with regard to whom similar evidence exists. If con-

[5] Vol. xxiii, 1909.

[6] Mr. Carrington, who is an American, is the author of a book, *The Physical Phenomena of Spiritualism* (London: Werner Laurie, 1908). This is nothing but a detailed exposure of the tricks employed by fraudulent mediums.

[7] Normally the only persons present were Eusapia, the three investigators, and a shorthand writer chosen by themselves.

[8] Loc. cit., p. 344.

[9] *Proceedings of Soc. for Psych. Research*, vol. xxiii, p. 313.

[10] *Proceedings*, loc. cit., p. 317.

current human testimony can establish any fact at all, there seems no reasonable ground for refusing to believe that D. D. Home on December 16th, 1868, floated out of one window and in at another, thirty feet above the pavement of a London street. The fact was vouched for in the most formal way by the three witnesses who were in the room—Lord Lindsay, afterwards Earl of Crawford, Lord Adare, afterwards Earl of Dunraven, and Captain Charles Wynne—and it is confirmed by the indirect testimony of a number of different persons, amongst the rest Sir William Crookes, who have declared that on other occasions they had seen Home raised several feet from the ground.[11]

Now, it will not, I trust, be supposed that I am putting the miracles at Lourdes upon the same plane as the levitations and materializations of Home and Eusapia Palladino, but I feel very strongly that if eminent men of science who own no allegiance to the Catholic Church, or any church, can accept the latter in spite of their utterly purposeless character, there is no reason why an instantaneous cure—which, after all, is far less of a prodigy than a suspension of the law of gravitation—should be rejected *a priori*. There are, in fact, two reasons why these spiritualistic marvels seem worth appealing to. In the first place, it must be plain that no Catholic ecclesiastic can have any interest in advertising these mediums or their works. So far as the Church of Rome maintains any official attitude towards such manifestations it would treat these apparitions of hands, jangling of instruments, or movements of tables as attributable only to preternatural agencies which, in default of any assignable explanation or reasonable purpose, must be regarded as diabolic. The gospels attribute material and physical effects to the devil, not only in the temptations of our Lord, but also in the maltreatment of the demoniac and the incident of the Gadarean swine. Moreover, the legendary account of Simon Magus (cf. Acts viii, 5, seq.), which is as old as the time of Justin Martyr (c. 150), describes Simon as working miracles by the power of Satan and as raising himself in the air. In the light of the Gospel teaching, it is curious that the spiritualistic mediums are commonly regarded as being possessed by their "control"[12]—Eusapia, for example, when she becomes the vehicle of the communications of "John King," speaks in a gruff male voice.

But, secondly, there are few, if any, of the believers in Eusapia who are not keenly alive to the utterly foolish character of her manifestations and to the suspicious features in her performance due to the comparative darkness, the occasional use of fraud and the passivity enjoined on all present.[13] It is fair to point out that in the miracles of Lourdes no conditions of this kind prevail. Such limitations as seem to exist—for example, no instance is known of the restoration of an amputated limb—seem also to have been generally respected in the miracles of our Saviour Himself.

Turning now to the phenomena at Lourdes, which have been referred to by so many who took part in the discussion on faith healing, I should have liked, if this paper did not threaten to extend to an extravagant length, to offer some criticism upon the historical sketch which forms a notable part of the article of Sir Henry Morris. Perhaps an opportunity may offer of dealing with the subject more at length elsewhere. Let me, then, only say in passing that Bernadette Soubirous's history, both before and after the apparitions, renders it extremely improbable that she should have been selected as a tool to "enlighten the ignorance of the peasantry" regarding the doctrine of the Immaculate Conception. The whole strange story of the apparitions, beginning and ending, in that remote village, within the space of a few weeks, has been minutely recorded. It certainly does great credit to the astuteness of the clergy if they foresaw that so small a spark should kindle so mighty a blaze. Moreover, contemporary documents show that they were so clever in concealing their purpose, that they were praised by the sub-prefect for their abstention from any display of sympathy. Abundant extracts from the correspondence between the prefect and his deputies may be read in the early part of the volume of Father L. J. M. Cros, *Notre Dame de Lourdes*, Paris, Retaux, 1901. To this book I may refer those who care to study the history of the apparitions further.

With regard, however, to the miracles themselves, which began to occur in the year of the apparitions, 1858, and have gone on ever since, it is important to observe how different in many respects is the Catholic point of view from that of the faith healer and especially of the Christian Scientist. By the Catholic such cures are never regarded as the natural and ordinary means appointed for the recovery of health. Miracles are always looked upon as a signal boon to which no one can plead any claim of right. Being thus only the manifestation of God's mercy, it is no subject of surprise that a cure should only be accorded partially. No doubt the Paris professors mentioned by Sir Henry Morris were right in saying in the case of Madame Rouchel that "it would have given the Holy Virgin no more trouble to completely cure the lupus than to fill up the perforations in the cheek and palate"; but Christians believe for all that that God bestows His gifts in accordance with His own wise and secret purposes. It would "give Him no more trouble" if He sent all men into the world endowed with perfect health and clear intelligence, but we know that He does not do so A miracle being, then, something quite extraordinary, and never to be claimed of right, a man is bound to take all reasonable precautions and to use the natural means which medical science may put within his reach to preserve his own health and that of those dependent on him. Again, a miracle in the Catholic idea is something done for the glory of God, and to confirm the faith of the vacillating. Hence, the careful verification of miraculous cures is a praiseworthy act, and the Church invites the fullest publicity, and willingly invokes the aid of science that it may be clearly understood how far the processes of Nature can go, and what lies beyond their province. This attitude towards the verification of miracles is in marked contrast to that of Christian Science; and from this it follows, as I would submit, that when in the case of the Lourdes miracles the character of instantaneousness is claimed for many of them, this claim is in general a reliable one, but that, from the lack of the habit of any such inquiry and verification, the similar statements made in connexion with the Zionist healings of Dr. Dowie or those of Christian Science commonly amount to no more than that the patient at a given moment ceased to feel pain.

But by far the most important of the differences between the miracles of Lourdes and those of Dr. Dowie or Mrs. Eddy is, I would urge, to be sought in the fact that whereas the cures of the latter pair can be shown (as, for example, in the book of Mr. Stephen Paget, *The Faith and Works of Christian Science*) to be limited to functional disorders, the cures at the piscina do include many cases of the instantaneous healing of organic disease. Of course, there are a considerable proportion of hysterical patients who go to Lourdes, and these may or may not benefit by the emotional excitement inevitably generated, at least from time to time, in such an atmosphere. But when we see it stated—as it was by so many of those who wrote in these pages a few weeks ago—that suggestion alone supplies the explanation of the marvels witnessed in the Pyrenees, I feel confident that the distinguished authorities who so expressed themselves would not have spoken thus if they had had fuller reports before them and had had time to study the question more carefully. Two excellent publications may be referred to as dealing specially with this subject. The one is a medical study of Dr. Van der Elst of Paris (*Contribution apportée à la notion d'hystérie par l'étude de l'hypnose*, Paris, Vigot Frères, 1908).[14] In this, though the subject is only touched indirectly, many references are made to the Lourdes miracles. For example, he says, while admitting the existence of hysterical cases, "but it has not been less easy for us to satisfy ourselves of the existence of cures which have nothing to do with functional troubles, but have put an end to ascertained organic mischief. Among the number are such as could not have taken place without destruction or reconstruction of matter. Whatever interpretation one may put upon them or whatever explanation may be given, there can in

[11] See Mr. Andrew Lang, *Cock Lane and Common Sense*, or the Dialectical Society's Report, and the Life of Home by his widow.

[12] "Control" is used in this sense to denote the spirit who speaks through the medium, and to whom all that is done in this state is attributable.

[13] All grabbing at hands or floating objects is strictly prohibited at the séances.

[14] See p. 147 and *passim*.

any case be no question of suggestion." The other work, which may be purchased for a few centimes in the series "Science et Religion," is a little book of a more popular character, but it is written by a medical man, Dr. H. Lavrand, Professeur à la Faculté libre de Médecine de Lille, who has given special study to the subject. Its name, *La suggestion et les guérisons de Lourdes* (Paris, Bloud, 1907), sufficiently indicates the nature of its contents.

I venture to urge, then, that the cases of miracles mentioned in the JOURNAL—those, for example, of de Rudder (p. 1470),[15] or of Mme. Rouchel (p. 1459), and others—would really prove a great deal more than previous contributors seem inclined to concede, if the evidence were more fairly considered, and if weight were allowed to the cumulative effect of a very large number of such cases. The difficulty always urged against the instantaneousness of the cure is the fact that no medical certificate or testimony is forthcoming immediately before the miracle. But surely there are matters—such, for example, as the existence of a hole in Mm. Rouchel's cheek, the presence of a still running purulent discharge, the fact that de Rudder's foot hung loose, and could be turned right round so that the heel was in front and the toes behind—which any fairly intelligent observer can be trusted to bear witness to.

Still such cases are numerous, and I will venture to recall the details of one of more recent date which appears in Dr. Boissarie's last book, and was previously narrated in *The Tablet* (April 18th, 1908). The following is Dr. Boissarie's report of the case:

Marie Borel, of Mende, 27 years of age, had when 19 an attack of typhoid fever from which she recovered perfectly. Two years later at 21 she began to suffer from appendicitis and remained subject to recurrences of that disease in spite of medical treatment. At the age of 23 an operation was considered necessary, and the appendix was removed at the Montpellier Hospital. The patient left the hospital twenty-five days later apparently quite cured. In a few months, however, an abscess formed where the incision had cicatrized and soon opened spontaneously. The patient began to suffer from abdominal pains and was obliged to enter the hospital at Mende, where an operation was performed by Dr. Bardol with the object of closing the fistula resulting from the abscess. But in spite of this treatment the fistula persisted. The patient then began to complain of pain in the back, and was placed for some time in Bonet's apparatus to give rest to the spine. When the apparatus was removed, the girl was unable to leave her bed, and for thirty months was confined to it. A few months after the appearance of the first abscess a second formed above it, which opened spontaneously. The patient objected to any surgical interference. Some months later a third abscess showed itself on a level with the iliac crest in the axillary line. The patient was now 25 years old, and had three suppurating fistulae, which soon began to give passage to faecal matter. Two other fistulae appeared subsequently in the lumbar region discharging pus. The vertebral column became more and more ankylosed, and the patient was scarcely able to move in her bed. The three fistulae, which discharged faecal matter, began to intercommunicate. A sixth fistula, also discharging faecal matter, was formed later in the neighbourhood of these three. For five months preceding the month of August, 1907, the patient had not had a motion through the anus, all the contents of the intestine escaping through the four fistulae in the iliac region. It was a case of artificial anus with several openings. The wounds had to be dressed twice a day, as a considerable amount of pus escaped from the two posterior fistulae. For thirty months before this date the patient could not empty her bladder without the use of a catheter, and from the beginning of the year 1907 the urine had become purulent. With a stiff vertical column ankylosed in the lumbar region, with the abdominal wall perforated by four apertures opening into the intestine and allowing its contents to escape through them entirely, the patient was brought to Lourdes in a condition beyond the aid of surgical skill. Her wounds were dressed twice a day on the 19th and 20th of August, 1907. On the morning of the 21st the dressings were removed, and we are told by the nursing ladies that they contained faecal matter anteriorly and pus posteriorly. She was then carried to the piscina. On the afternoon of the 21st the dressings were removed before the patient was immersed. To the great surprise of every one, the lint and cotton were quite dry, there was no trace of faecal matter, and posteriorly only a few small yellowish stains. The same morning she had a motion per anum, which had not occurred for the last five months. Still the cure was not complete. The patient had still to be carried on a stretcher. On the 22nd of August after the immersion she felt better and was able to rise unsupported, which she had not done for thirty months. She could also pass urine without the catheter. She then came to the Bureau des Constatations, where she was examined under the direction of Dr. Desplats, of Lille. The dressings, which had not been changed from the previous day, August 21st, in the morning, were perfectly dry; the fistulae were closed and healed. The vertebral column could easily be moved in every direction; the patient leaned forward, backward, sideways. She showed us the certificate of Dr. Bardol [this, it seems, was only dated "August"] who says that she is suffering from purulent and faecal fistulae of the abdominal wall, connected with chronic inflammation of the caecum and appendix, and also from ankylosis of the vertebral column, in consequence of which she is unable either to rise or walk. The patient has been well ever since, the bowels and bladder have quite recovered their natural function. The urine is clear.[16]

From a long account of her own condition given by the patient in answer to questions, we learn that the wounds were terribly offensive even after her arrival in Lourdes. Still, she was seen by quite a number of people, who pitied her deplorable state. Unless we suppose a most extraordinary mania for romancing—unlikely in a girl who was so soon, by her own choice, to enter a convent, and who made such a good impression on all observers—it is impossible to doubt that the wounds still discharged faecal matter on the morning of the day before her cure, and this fact was confirmed by the evidence of the ladies who dressed them. On October 15th, 1907, Dr. Bardol, who had been in charge of the case before Marie Borel went to Lourdes, wrote in the following terms:

Marie Borel was for a long time under my care at the hospital of Mende. She suffered, as you say, from fistulae with faecal discharge in the region of the right iliac fossa as a result of lesions in the caecum and the appendix, for which she had undergone a first operation at the Montpellier Hospital under Professor Forgues. Later on I myself made a second incision at the hospital of Mende, but I must frankly confess that my explorations in the iliac fossa did not extend very far, and that my finger was soon arrested by a matted growth of false membranes which opposed an impassable barrier to any direct examination.

Since her pilgrimage to Lourdes, Marie Borel has enjoyed wonderfully good health. . . .

It is indisputable that she was cured at Lourdes contrary to all expectation. My friend, Dr. H., who comes from the Paris hospitals, and is a pupil of Charcot, when consulted by me about the case, abstained from offering any medical interpretation. I can only do as he has done, since I belong to the same school which bows before the evidence of facts even when the explanation of the facts is lacking.

(Signed) Dr. BARDOL.

With regard to the same remarkable cure, the most recent evidence I have to produce is from an article which appeared in the *Etudes* for December 5th, 1909. The writer is Dr. Henri Guinier, "ancien agrégé libre de la Faculté de Montpellier," who describes himself as having been well acquainted with Lourdes for forty years, as he commonly took his holidays in that neighbourhood, but who goes on to add that he was also "*sceptique pendant plus de trente ans par education professionnelle, à la manière des médecins trop occupés, indifférents ou blasés, qui se bornent à faire de superficielles lectures de comptes rendus incomplets*," etc. After briefly recalling the facts of Marie Borel's six abdominal fistulae, he states that he, with a number of other members of his profession, had had the opportunity of examining Marie Borel on August 22nd, 1907, an hour or two after her cure, and again a year afterwards, when she presented herself at the Bureau des Constatations on August 20th, 1908. With regard to August 22nd, 1907, he says:[17]

We saw six abdominal depressions between two and three centimetres in diameter, irregular, superficial, already slightly coated (*tapissés*) with a reddish cicatricial tissue in full process of development, which was perfectly dry, and which occupied the site of the fistulae so recently closed. The 20th of August, 1908, a year afterwards, every trace of cicatricial tissue had disappeared; upon the healthy skin of the abdomen, now supple and responsive to the touch, there were six patches of redness which marked the position of the former fistulae, but that was all. The abdomen was otherwise absolutely normal.

[15] May I say in passing that a striking example of the inadequate *connaissance de cause* often shown in medical estimates of alleged miraculous occurrences is offered in Mr. Butlin's note on the de Rudder case (BRITISH MEDICAL JOURNAL, p. 1470)? That Mr. Butlin writes in absolute good faith cannot be for a moment in doubt. But when he states that there is no evidence to show whether the bones united in the first months after the accident, this is certainly not a fact admitted by the other side. Dr. Affenaer attended de Rudder immediately he was summoned. He reduced the fracture and bandaged the limb. But the patient suffered so much pain that the bandage had to be removed. Thereupon, we are told, the doctor found ulceration and a gangrenous wound. "Les fragments osseux, baignant dans le pus, dépouillés de leur périoste, n'avaient subi aucun travail de réparation Malgré des soins assidus pendant de longs mois, le Docteur Affenaer ne put obtenir la consolidation."—Dr. A. Deschamps, *Un miracle contemporain—Pierre de Rudder*, Paris, Bloud, 1903, p. 6.

[16] *The Tablet*, April 18th, 1908, p. 623.

[17] *Etudes*, December 5th, 1909, p. 595.

If suggestion can effect such marvels as these, there is no disease, seemingly, with which it cannot cope. But even then we should be puzzled to explain the cure of children under 3 or 4 years of age, of which cases it would be possible to make a not inconsiderable list. One of the most remarkable of these is the case of the little child Aumaître, the daughter, not yet 2 years old, of a doctor at Nantes, who was instantaneously cured of club-foot at Lourdes when surgical operations had failed to effect any improvement. An account may be found in an article by M. Mangin in the *Annales des Sciences Psychiques* for 1907 (pp. 858–859).

Another interesting cure is that of a "*maladie de Pott*" which has been studied by M. Georges Bertrin in a separate brochure entitled *Un miracle d'aujourd'hui* (Paris, Lecoffre, 1908); but I prefer to pass over this and one or two others in order to note an English case which was made known in the *Journal de la Grotte* two days after the faith-healing number of the British Medical Journal appeared, and which has since been published in English Catholic newspapers. For a copy of this statement I am indebted to the kindness of Mr. Boothman, the father of the patient, and himself a convert clergyman.

I, the undersigned, Edward Duncan Boothman, M.A.Cantab., formerly rector of Shelton, near Stoke-on-Trent, now residing at Compton Lodge, near Dover, make the following declaration before Drs. Boissarie and Cox, in the Bureau des Constatations at Lourdes:

My son, Joseph Duncan Boothman, aged 16 years, here present, miraculously healed, and desiring to be examined by medical experts, has suffered for ten years past from otorrhoea, involving the almost complete destruction of the drum of the left ear, together with chronic suppuration, with intense pain and absolute deafness, even by conductivity with the bones of the head. He has been treated by several specialists in Brussels, Dover, and London.

On May 13th Dr. Lake, a distinguished aural surgeon of 60, Harley Street, London, W., declared that the boy's life was in imminent danger, and gave the following certificate:

"60, Harley Street, Cavendish Square, W.

"I have examined Master D. Boothman and find a destruction, almost complete, of the drum of the left ear, with chronic suppuration, and I consider an operation advisable, and ultimately necessary.

"Richard Lake.

"12th May, 1910."

He added, after examination by speculum, that the inflammation had taken an acute form and might at any moment "flare up" and reach the brain, causing death.

At this date my son displayed the following symptoms: Tenderness of the mastoid, and at the base of the ear; purulent offensive suppuration; contraction of the muscles attached to the mastoid, causing the head to lean on the left shoulder; constant acute pain in the ear; loss of sleep; general emaciation of the body. The diseased ear was quite insensitive to the vibration of a tuning fork applied to the bones of the head; no sound could be heard by the left ear.

In giving the above certificate, Dr. Lake stated that the operation which he deemed "ultimately necessary" had its uncertainties, and that when successfully achieved the boy would be absolutely deaf for life on the left side.

Mr. Boothman then answered that he wished to take the case to a higher power than that of human science, and that he was beginning a novena to Our Lady of Lourdes.

Dr. Lake replied that evidently upon surgical questions I saw things from a totally distinct point of view from his own; that he fully respected my religious convictions, but he begged me earnestly to lose no time in putting my views to the test of experience, as the danger to my son's life was becoming daily, if not hourly, more threatening.

I thanked the courteous and eminent surgeon and withdrew.

The novena, or nine days' prayer, was then duly begun,

On Sunday, May 22nd, the feast of the Most Holy Trinity, my son was serving mass in the chapel of the Convent of the Augustinian Ladies at Kearsney Manor, near Dover. At the moment of the Elevation of the Sacred Host my son felt a sharp pain in the left ear, and when mass was over, told me of it. He assured me also that the ear was well, the suppuration ceased, and that he could hear better than he had done for years past.

That this was the case soon became evident to us all, and we noted a marked change in the boy's features. His sister Mary, who is 15 years old, when she saw him, declared that at first she did not recognize him owing to the disappearance of the lines of suffering which she had been so long accustomed to observe.

On Monday, May 23rd, Dr. Howden, of Dover, rang me up on the telephone to tell me that he had received a letter from Dr. Lake, asking why the operation he had advised was delayed, warning him that the slightest delay was highly risky. I was able to answer immediately in the telephone: "My son is healed; he hears well, I will bring him to you to-morrow (May 24th) so that you may examine him." Accordingly, on May 24th, Dr. Howden examined the boy, and pronounced his hearing by conductivity to be normal, and that he could hear the ticking of a watch at the distance of three inches.

On June 2nd the boy was examined by Dr. Murphy, of Dover, who gave his certificate in these terms:

"24, Waterloo Crescent, Dover.

"Master Boothman was under my care until the 4th of May last, suffering from chronic otorrhoea, with almost complete destruction of left drum. I have to-day examined him and find the ear dry and free from suppuration and the hearing immensely improved.

"June 2nd, 1910. "C. F. Murphy, F.R.C.S."

As he handed me the certificate, he said: "The case is indeed wonderful, and I congratulate you, but you must understand that a recrudescence is possible." I answered, "Doubtless, but it would be equally possible were the healing the result of human science."

Saturday, June 4th, the boy, with his mother and myself, were able to begin our promised pilgrimage. We reached Lourdes on June 7th, and to-day, June 8th, we present ourselves in the Bureau des Constatations.

(Signed) E. Duncan Boothman, M.A.Cantab.

I am unable properly to appreciate the medical aspects of this case, but the cure has so far persisted, and I give it as the most recent example known to me of those wonders of healing at Lourdes which certainly seem to call for more attention than they have hitherto received.

LONDON WATER.

Report on Bacteriological and Chemical Examinations.

The fourth report of Dr. A. C. Houston, Director of Water Examination, Metropolitan Water Board, on the results of the chemical and bacteriological examination of the London waters for the twelve months ended March 31st, 1910, which has recently been issued, is a monument of conscientious labour and a record of excellent scientific work. The results are carefully tabulated, and the document is full of interesting details. The greater part of the report is of a technical character, and only a short summary can be given here.

Bacteriological Results.

The results of the bacteriological examination are stated as follows:

Raw Water.—The averages of microbes per cubic centimetre for the twelve months were as follows: Raw Thames water—5,268 per c.cm.; highest 19,794 (December), lowest 913 (May). Raw Lee water—37.071 per c.cm.; highest 166,131 (February), lowest 1,679 (September). Raw New River water—2,801 per c.cm.; highest 14,989 (December), lowest 515 (May).

It is pointed out that these results have an important bearing on the abstraction figures. In a gravitation scheme, with a superabundant source of supply and huge storage reservoirs, the amount abstracted for storage purposes should be inversely proportional to the current impurity of the water. In the circumstances pertaining to the London supply this is possible only in a partial sense, but attention is again drawn to the fact that the amount of river water abstracted during the months when the river contains an excessive number of bacteria is so large as to emphasize the desirability of passing it through storage reservoirs antecedent to its filtration.

Filtered Waters (including Kent and Lee Valley Unfiltered Water).—The following statement indicates that the exclusive (that is to say, exclusive of samples containing 100 or more microbes per c.cm.) figures for the filtered waters were small, and the percentage reduction effected by the processes of subsidence and filtration remarkably good:

	Thames.	Lee.	New River.
Raw water (microbes per c.cm.)...	5,268	37,071	2,801
Filtered water (microbes per c.cm)	14.3	21.9	10.1
Percentage reduction	99.7	99 9	99.6

Too much stress, however, Dr. Houston says, must not be laid on percentage reduction of microbes. The worse

initially the raw water, the easier it is to obtain a final filtrate yielding satisfactory results on the basis of percentage purification.

The order of merit, based on the exclusive figures, is as follows, the average number of microbes per c.cm. being respectively:

Kent, 7.2; New River, 10.0; Grand Junction, 11.8; Lambeth, 11.9; West Middlesex, 14.1; Southwark and Vauxhall, 14.6; East London (Thames), 19.0; Kempton Park, 19.6; East London (Lee), 21.9.

Tests for Special Organisms.

The following are the results of tests for special organisms:

B. enteritidis sporogenes Test.

Raw Waters.—35.8, 37.6, and 9.4 per cent. of the samples of Thames, Lee, and New River water respectively yielded positive results with 10 c.cm. of water.

Typical B. coli Test.

Raw Water.—The results, judged by this test, were unsatisfactory, having regard to the fact that the Rivers Thames and Lee are known to be seriously polluted with sewage, and that there is every reason to suppose that the majority of the *B. coli* found in the raw waters are of human excremental origin. The New River contained *B. coli* in 1 c.cm (or less) in 49 per cent., the River Thames in 92.6 per cent., and the River Lee in 93.1 per cent. of the samples. Taking a one-figure average result, the average number of *B. coli* per c.cm., according to this calculation, was as follows:

Typical B. coli per c.cm. of Raw Water.

	Arbitrary One-figure Result.
River Thames	18 0
River Lee	26 0
New River	1.6

The "best month" results were remarkably good, and the average results were also satisfactory.

The improvement in the Southwark and Vauxhall supply during the years 1906-7, 1907-8, 1908-9, and 1909-10 is very striking, the percentage number of first-class samples working out as follows: 47.6, 67.2, 75.5, and 80.0 respectively.

For the filtered waters a one-figure result per cubic centimetre of water, expressed as typical *B. coli* per 1,000 c.cm. of water, is as follows:

Kent, 1 to 2; New River, East London (Lee), Kempton Park, Chelsea, Grand Junction, West Middlesex, Lambeth, Southwark and Vauxhall, 2 to 3; East London (Thames), 3 to 4; Lee derived water, New River derived water, Thames derived water, all London waters, 2 to 3.

It is noted that whereas out of every 100 *B. coli* isolated from the *raw* Thames, Lee, and New River waters, 82.3, 82.2 and 73.9 respectively proved to be typical *B. coli;* the corresponding figures for the filtered waters derived from these sources were 32.6, 28.2, and 37.8 respectively. The collective results were 80.0 in the case of the *raw* waters, and 35.0 in the case of the filtered. This is a proportional statement, and does not refer to the actual number of *B. coli* in the two cases. On the average, for the year under review, the River Lee is more impure than the Thames or New River, particularly than the latter. As regards the filtered waters it is noteworthy that on the average, and in the best and worst months of the year, the Thames-derived waters compare unfavourably with the Lee and New River-derived waters.

Comparison between 1908–9 and 1909–10.

Comparing the condition of London water in 1908–9 and 1909–10 Dr. Houston says that chemically the *raw* Thames, Lee, and New River waters yielded results decidedly worse in 1909–10 than in 1908–9, as judged by the ammoniacal, albuminoid nitrogen, permanganate, turbidity, and colour tests. The filtered waters, as judged by the albuminoid nitrogen, permanganate and colour tests were clearly affected by the unsatisfactory quality of the raw waters during the period under review. During no less than five out of the twelve months the oxygen absorbed from permanganate test yielded results exceeding 0.1 part per 100,000 parts. It needs to be remembered, says Dr. Houston, that a first-class water supply should be free from reasonable objection on physical and chemical as well as on bacteriological grounds.

Bacteriologically, the *raw* waters contained many more bacteria in 1909–10 as compared with 1908–9. The bacteria growing in agar and bile-salt agar at 37° C. were also increased during the period under review. The *B. coli* results were also less satisfactory. As regards the *filtered* waters, the general trend of results was slightly in the direction of a decrease in purity, but having regard to the unfavourable meteorological conditions and unsatisfactory state of the *raw* waters, the results afford some ground for satisfaction.

Conclusions.

In conclusion Dr. Houston says that about 80 per cent. of the London water supply is derived from sewage-polluted rivers. As judged by the usual chemical and bacteriological standards the *raw* waters above the "intakes" for waterworks purposes are undoubtedly unsatisfactory in quality, particularly during the winter months. Within recent years a marked improvement has taken place in the methods of purifying sewage so as to render the resulting effluents non-putrescible and *chemically* unobjectionable. Apart from sterilization, however, no known practical process has yet been found which turns out a "safe" effluent, *bacteriologically*, and the great majority even of chemically-satisfactory effluents are swarming with excremental bacteria. It is possible that improved methods of purification will, in a chemical sense, keep pace with increasing pollutions of the rivers Thames and Lee, but the outlook bacteriologically is less hopeful. Prospective legislation as regards sewage purification would seem likely to run on the common-sense lines of protecting the general interests of the community at large, leaving to individual authorities who venture to utilize polluted rivers for waterworks purposes the full responsibility of employing such superadded processes of purification as the particular necessities of their own case demand.

Although the *raw* Thames and Lee contain *B. coli* in undesirable numbers, faecal streptococci are seldom discoverable in 1 c.cm. amounts of the water. Further, the results of a most elaborate search for the typhoid bacillus and Gaertner's bacillus have yielded practically negative results under conditions of experiment which have been shown to be effective in the case of *artificially infected* samples. He does not, however, contend that these pathogenic microbes are in reality uniformly absent, but that, if present, their numerical abundance must be so small that it is almost inconceivable that any of them could ever survive passage through the storage reservoirs and reach the filter beds, which in their turn remove about 98 per cent. of the bacteria.

Storage.—Dr. Houston calls attention to the striking new fact shown in his report that London is not really drinking merely filtered *raw* river water, but *raw* river water which by storage processes has been purified bacteriologically *antecedent* to filtration to a remarkable extent. If all the prefiltration waters were mixed in their respective proportions, the quality of the mixed water antecedent to filtration would be such that on the average over 36 per cent. of the samples would contain no typical *B. coli* in 10 c.cm. of water. When it is remembered that 92.6, 65.7 and 12.8 per cent. of the samples of *raw* Thames water contain typical *B. coli* in 1 c.cm., 0.1 c.cm., and 0.01 c.cm. respectively, the corresponding figures for the Lee being 93.1, 61.7 and 22.0 per cent., the transformation the river water has undergone *previous* to filtration becomes strikingly apparent. Nor does even this represent the highest level of efficiency. Under different and elastic regulations as regards abstraction of river water and a more complete system of "pooling" of stored water interests, over one half the samples (individually as well as collectively) of prefiltration water ought to contain no typical *B. coli* in 10 c.cm. of water. Even putting sedimentation and devitalization completely on one side, he says, the "levelling" effect of storage renders the possibility of any sudden accidental concentrated and dangerous pollution of the river water above the "intakes" a matter of much less grave concern than would otherwise be the case. Storage, in this sense, is equivalent to dilution, inasmuch as it "spreads" the dose of poison over weeks or months and it may indeed, quite apart from any question of devitalization, render innocuous a microbial contamination, which in a concentrated form would be apt to be highly dangerous.

Filtration.—Dr. Houston points out that the rate of filtration at the different works is unequal, and would seem to bear no apparent relation to the variable quality of prefiltration water. Other things being equal, the rate of filtration at a works should be largely governed by the quality of the water that is being filtered. All the filter

beds should have separate filter wells for sampling purposes. It is not sufficient that the quality of the mixed filtered water is good; it is most desirable that each of the filtration units should be in *proven* and perfect working order. The desirability of using only stored water becomes the more apparent when it is remembered that when a filter bed is yielding unsatisfactory results the filtrate cannot, generally speaking, be run to waste until the reports are of a more reassuring character. Speaking generally, it would seem to be safer to use a coarse sand and filter rapidly when dealing with an *adequately* stored water, than to use a fine sand and filter slowly when dealing with *raw* or inadequately stored river water. In the former connexion mechanical filters may play a useful part owing to the ease and rapidity with which they can be cleaned, but it is possible that the old sand filters, if worked under slightly altered conditions (for example, using coarser sand and filtering more rapidly), may greatly increase their field of usefulness. The only way, apart from sterilization, of rendering the prefiltration water always comparatively, if not absolutely, innocuous, is by sedimentation, devitalization, and equalization—in other words, by storage.

Service Reservoirs.—Service reservoirs should never be so small as to lead to variable rates of filtration during the twenty-four hours, hence a "pooling" of service reservoir accommodation is desirable. The equalizing and delaying effect of even transitory storage in service reservoirs is the culminating step in the protection afforded to the water consumer.

The Water as Finally Delivered to Consumers.—Five years' work on the London water question has convinced Dr. Houston that to a progressively increasing extent the "safety" of the metropolis as regards water supply is being reasonably, if not absolutely, assured. As a counsel of perfection he advocates the choice of an initially pure source of water supply; nevertheless, his own results and experiments seem to indicate clearly that the evil effects even of an impure source can be largely, if not entirely, annulled by adequate storage and efficient filtration.

The London Water Question in 1910.

Dealing with the position of the London water question in 1910, Dr. Houston says that the *prospective* security of London, as regards its water supply, should not be based, or only to a limited extent, on past comparative immunity from waterborne diseases. Nor should much, if any, reliance be placed on a comparison between the health statistics of towns using upland and river sources of water supply respectively where *inter alia* the conditions of life render such comparisons of doubtful or negligible value. Reliance should no longer be placed on sand filters as an absolute and final safeguard. Storage reservoirs should no longer be used merely to cover periods of emergency. The aim now should be to abstract *raw* river water as judiciously as possible, to store it for as long a period as is possible, and to filter it as perfectly as is reasonably practicable. Conceptions as regards safety should be no longer based on relative and often unwarrantable assumptions, but on indices of proved utility—for example, the death-rate of *B. coli*. Storage should be no longer regarded as mere sedimentation, but as a devitalizing and equalizing factor of the utmost importance. The raw waters are not only now tested for the total number of bacteria, the number of bacteria growing at blood heat, and the number of *B. coli* and excremental bacteria in general, but they are also examined for the presence of the microbes of waterborne disease. Representative samples of all the water previous to filtration are now examined at frequent intervals for *B. coli* and excremental bacteria in general, and in this way a constant check is kept on the quality of London water *antecedent* to filtration. The filtered waters also are always examined for the total number of bacteria, the number of bacteria growing at blood heat, and the presence of *B. coli*. In addition to the more elaborate tests, rapid tests (chemical and bacteriological) are also made which allow of advance telephone reports being sent to the various work, chemically on the same day as the samples are collected, and bacteriologically the day after.

The Question of Accident.

Dr. Houston points out that in addition to filtration and storage it is also necessary to guard against the possibility of accident. In this connexion questions of drainage, health of workmen, suction of impure water into water mains, laying of new mains, alteration to existing mains, condition of service reservoirs, etc., deserve attention. There is a growing tendency to regard any sudden accidental gross infection as of most dangerous significance, and to consider more constant but highly diluted pollutions as, relatively speaking, of lesser importance. The method of water purification now in progress (storage) renders the position "safe" as regards the river water, provided that no *fresh* and dangerous contamination takes place in connexion with the storage reservoirs, the filter works, the service reservoirs of the delivery mains. Dr. Houston's final opinion is that the "*quality* policy" of the Metropolitan Water Board should be directed towards securing an "epidemiologically sterile" water (that is, a water containing none of the microbes associated with waterborne epidemic disease) *antecedent* to filtration by storage (sedimentation, devitalization, and equalization), aided, if needs be, by the occasional employment of supplementary processes of water purification.

Complaints from Consumers.

Dr. Houston says that, relatively to the population, very few complaints reach the department as to the quality of the water. During the period under review, only sixty were received. The commonest complaints are as follows:

Presence of suspended matter, hardness, colour, deposit on boiling, smell, and taste.

Exceptional cases apart, samples are collected on the same day as the complaint is received.

Alterations to mains, fresh connexions, variations of pressure, and other matters common to all water supplies, account usually for the transitory and local presence of suspended matter in the supply.

As regards *hardness*, the water varies only slightly in this respect, but consumers sometimes are of the belief that some increase has suddenly taken place. The deposit of lime salts on boiling is another fact which at times appears suddenly to strike the consumer as new. During the winter months of the year the water is browner in colour, but as compared with moorland supplies, the London water may be considered relatively very free from brown coloration. As regards smell and taste, the cause, if really existent, is usually found to be associated with foul cisterns. On several occasions dead and decomposing starlings, sparrows, bats, and mice have been found in the cisterns. Sometimes, however, these defects appear to be due to imperfect circulation of water, to new mains, or to joints made with taste-imparting materials.

REPORT ON RESEARCH WORK.

Typhoid Bacillus and Gaertner's Bacillus.

In his Second Research Report Dr. Houston gave the results of a special search for the typhoid bacillus in 156 samples of *raw* river water. The total amount of water dealt with was 29,400 c.cm. The aggregate total number of bacteria (gelatine at 20–22° C.) in these 29,400 c.cm. was computed to be 135,687,500. The total number of colourless (or nearly colourless) colonies subcultured was 7,329, but none of them proved to be the typhoid bacillus. Since then additional experiments have been carried out, and Gaertner's bacillus as well as the typhoid bacillus has been searched for. Each sample was divided into two equal parts of 500 c.cm. (A and B). The A sample was artificially infected with a definite and very small number of typhoid bacilli and Gaertner's bacilli. The water was then centrifugalized, and the deposit spread over bile-salt agar plates of special composition. After incubation the colourless colonies were subcultured and the characters of the microbes concerned carefully studied. The B sample was treated in *precisely* the same manner except, of course, that it was not artificially infected. Twenty-four experiments were carried out; 14 with *raw* Lee water and 10 with *raw* Thames water, containing, on the general average, 62,688 bacteria per c.cm. (gelatine at 20-22° C.). The worst sample contained 760,000 and the best sample 1,200 bacteria per c.cm. respectively. The total number of colonies selected for study was 5,451 in the infected A samples and a similar number (5,451) in the case of the non-infected B samples. As regards the B samples, out of the 5,451 studied one resembled Gaertner's bacillus and another resembled very closely the typhoid bacillus. The remaining

5,449 microbes were all excluded as not being the typhoid bacillus or Gaertner's bacillus. Excluding, for the moment, from consideration the two microbes just alluded to, it may, says the report, be concluded that the non-infected B samples must have contained *fewer* than 1 typhoid bacillus per 6,485 c.cm. of water and *fewer* than 1 Gaertner's bacillus per 18.10 c.cm. of water. It would seem, therefore, that these pathogenic microbes cannot be *uniformly* present in the *raw* waters unless in very small numbers. Dr. Houston is not prepared either to affirm or deny their pathological significance, but if the typhoid-like microbe had been isolated from a case, or suspected case, of typhoid fever, he does not think its identity would have been likely to be questioned. The experiments are still being continued, but meanwhile the conclusion is justifiable that the *raw* sources of water supply, although sewage-polluted and rich in excremental bacteria, do not *uniformly* contain the microbes of waterborne disease unless in very small numbers. The results are unquestionably reassuring, but must not be interpreted as justifying any relaxation in the existing, or proposed, processes of water purification. The existing, or proposed, processes of water purification, he says, should be based on the assumption that the *raw* waters are always specifically dangerous, and results, such as have been described, should be welcomed only as suggesting the hope that the responsibilities of the Water Board may, after all, be less onerous than has hitherto been conjectured, and that the "safety" of London may not rest solely on the safeguards interposed between the sources of supply and the tap of the consumer.

Faecal Streptococci.

The raw river waters (Thames, Lee, and New River) were examined for faecal streptococci. The significance of streptococci in water has been investigated by Dr. Houston for over ten years. His chief reasons for considering the streptococcus test of value in the examination of water supplies are:

1. That streptococci are superabundant in human faeces.
2. That faecal streptococci are absent or non-discoverable in a relatively large volume of pure water.
3. That faecal streptococci do not multiply in pure water.
4. That some faecal streptococci are of feeble vitality, and that the presence of such streptococci in a water, if they could be differentiated from their more robust companions, would seem to indicate pollution of *recent* and therefore specially dangerous sort.

The results confirmed those of 1908, and showed that the *raw* waters seldom contain any living faecal streptococci in 1 c.cm. of water, and that even when present the number is usually small (71 streptococci out of 1,908 subcultures). Dr. Houston concludes that human faeces usually contain a multitude of streptococci—(100,000 per gram is, according to his results, an underestimate of the average number). The *raw* waters (Thames, Lee, and New River) contain, on an average common to all three, less than one streptococcus per c.cm. of water, the same method being employed for their isolation as was used in examining human faeces. The *raw* waters, therefore, on the basis of the streptococcus test are, on the average, at least 100,000 times less impure than human faeces; or, to put it in another way, 10,000 gallons (100,000 lb.) of *raw* water contains less than 1 lb. of human faeces, as judged by the streptococcus test. As the *B. coli* results show that, on the average, the processes of storage and filtration improve the *raw* water bacteriologically, *at least*, 1,000 times, it may inferentially be concluded that the chances of any appreciable number of faecal streptococci ever reaching the consumer of *stored and filtered* water are extremely remote. He adds: "The foregoing results, no doubt, may be judged to be in favour of the comparatively harmless character, *faecally considered*, of even the *raw* sources of London's water supply. But it must be borne in mind that some microbes of faecal outcome may be more resistant to adverse conditions than are streptococci, and once more I would urge the importance of paying attention not only to the results yielded by a single test, but to *all* the factors, chemical, bacteriological, physical, meteorological, and epidemiological which bear, directly or indirectly, on the question of the quality of *raw* sources of London's water supply."

Prefiltration Water.

Dr. Houston gives the results of the examination of the prefiltration water, that is, representative samples of practically all the London water (raw stored, gravel, well, and mixed water) *antecedent* to filtration. He points out that London is not now really drinking *raw* river water, but river water most of which has undergone a remarkable transformation in storage reservoirs. Over 206 million gallons are filtered daily at the various works, and for over a year a constant check has been kept on the quality of the water previous to filtration by the examination bi-weekly of representative samples (prefiltration samples). There are over 160 filter beds now in use, and the great majority of them are in active operation at one and the same time. It is practically impossible to test even once a day the quality of water from each filter bed, and consequently water is constantly going into supply the purity of which has not been actually established by tests. The "quality policy" of the Water Board should, it is pointed out, be directed towards providing an "epidemiologically sterile" water antecedent to filtration, because then any breakdown in the filtration arrangements would become a matter of almost secondary concern. By "epidemiologically sterile" water is meant water which has undergone such a transformation in the storage reservoirs, as judged by the *B. coli* death-rate, that the survival in it of any of the microbes, associated with epidemic waterborne disease is almost, if not quite, inconceivable. In this report it is shown that the relative disappearance of *B. coli* from the river water under conditions of storage is so striking that even if pathogenic bacteria were uniformly present in the river water, their parallel destruction in the storage reservoirs may safely be assumed. It may perhaps be said that only the absolute death of all *B. coli* allows of any such inference. In this connexion several things must be remembered. In the first place not all the *B. coli* in the effluent water from a storage reservoir are of necessity of river water origin. Some of them may be derived from the excrement of birds; and the question of fish-life in the reservoirs, as a contributory factor, also merits consideration. In certain cases excrementally polluted dust may also play a part. Further, it is a fact well known to bacteriologists that out of a large number of individual microbes all of one species, a few are more resistant than their fellows and these are often spoken of as the *resistant minority*. It may be that the few *B. coli* left in an *adequately* stored water may be explained in the foregoing manner or perhaps the explanation may be found in part to be that the few surviving *B. coli* really belong to specially hardy races of *B. coli* initially present in the river water.

The prefiltration waters are examined in two ways. Once a week the liquid lactose bile-salt peptone test is used with 10 c.cm. and 1 c.cm. amounts of water. Gas formation is regarded as a positive result, and the absence of gas formation is regarded as a negative result, and one implying the absence of typical *B. coli* from the amount of water tested. Once a week also the solid lactose bile-salt peptone agar is used and the number of colonies (chiefly excremental bacteria) enumerated. As regards the former test, which was systematically commenced in April, 1909, and has therefore been in progress for a year, it is convenient to speak of A, B, and C samples. An A sample is one which yields negative results with 10 c.cm. of water—that is, it contains no typical *B. coli* in 10 c.cm. A B sample is one which yields positive results with 10 c.cm., but negative results with 1 c.cm. of water. A C sample is one which yields positive results with 1 c.cm. of water. On the basis of the test employed, a B sample is ten times better than a C sample, and an A sample is at least ten times better than a B sample, and at least one hundred times better than a C sample. It has been Dr. Houston's practice for many years to consider a water, about to be purified, of good quality if, at its source, it usually contains no typical *B. coli* in 1 c.cm. of water. As regards water as sent into consumption, his old standard of a negative result in the majority of samples with 100 c.cm. of water is now generally accepted as a reasonable limit. With regard to prefiltration samples, generally speaking, the standard of a negative result with 10 c.cm. of water is the one to be aimed at. During the year ended March 31st, 1910, the *raw* waters (81 samples of each) yielded the following percentage of A, B, and C samples:

	A	B	C
	Per cent.	Per cent.	Per cent.
Raw Thames	0 0	(6.2+93.8)=100.0	93.8
Raw Lee	0.0	(4.9+95.0)= 99 9	95.0
Raw New River ...	2.5	(50.6+46.9)= 97.5	46.9

The net result of the examination is that if all the prefiltration waters were mixed together in their proper pro-

portions the mixture would actually yield no less than 36 per cent. of A samples. In other words, the filters, instead of having to deal with *raw* river water, almost entirely of the C class (Thames, 93.8; Lee, 95.0; New River, 46.9 per cent.), deal on the average with water which, as regards over one-third of the samples, is *at least* one-hundred times better on the basis of the test employed (36.7 per cent. of A samples). Satisfactory as these results are, they do not represent, in Dr. Houston's opinion, the highest standard that could be even economically attained. Altered regulations as regards abstraction of river water, more perfect circulation of the water through the reservoirs, and "pooling" of stored water interests would, Dr. Houston considers, result in all the filter beds receiving water yielding over 50 per cent. of A samples.

Morgan's Bacillus.

Samples of raw Thames, Lee, and New River water were examined for the presence of Morgan's (No. 1) bacillus. The heavy toll which "diarrhoeal diseases" take of children under 5 years of age is a matter of common knowledge, but, although some of the conditions which tend to foster this excessive mortality are well known, the main cause of this malady is still to seek. Morgan, Boycott, Ledingham, Scholberg, and many other observers have, in in the main, failed to associate infantile diarrhoea with the *B. dysenteriae* group of microbes, and Morgan has described a bacillus (Morgan's No. 1 bacillus), which he considers may possibly be a true cause of summer diarrhoea. This bacillus presents certain characters which are uncommon and striking. Apart from other tests, an outstanding feature is that this microbe ferments glucose with gas production, does not produce gas in mannite media, and forms indol in peptone cultures. Some of the chief reasons why Morgan and his colleagues consider this microbe of special significance, are as follows:

It is frequently found in cases of "infective enteritis"—in the faeces during the progress of the affection, and in the autopsy material after death.

It is seldom found in the faeces of children not suffering from "infective enteritis" or in the autopsy material from deaths due to other causes.

It is not only pathogenic on injection, but when mixed with the food of animals it may cause diarrhoea and death.

It is frequently agglutinated by the sera of children suffering from summer diarrhoea (especially at or near convalescence) and seldom (one out of twelve in a very low dilution) by the sera of healthy control children.

"Infective enteritis" is not the only infantile diarrhoeal disease, but speaking of children's diarrhoeal diseases in general, the cause of infection would not seem to be operative through impure water supply. In all sixty-six samples were examined, in 1 c.cm. amounts. Gathering together all the results it was found that:

(*a*) 1,701 colonies grew on the neutral-red bile-salt peptone mannite agar plates.
(*b*) 1,204 of these were red colonies and so were rejected.
(*c*) 497 were colourless (or nearly colourless) colonies and these were subcultured into a glucose medium.
(*d*) 445 produced *no* gas in this glucose medium and so were rejected.
(*e*) 52 gave rise to gas formation in this glucose medium and these were subcultured into a mannite medium.
(*f*) 27 produced gas in this mannite medium and so were rejected.
(*g*) 25 produced *no* gas in this mannite medium and these were subcultured into a peptone medium.
(*h*) 25 yielded no indol and these were rejected.

Morgan's No 1 bacillus was not found in 1 c.cm. amounts of numerous samples of the *raw* Thames, Lee and New River water. Nearly all the *raw* river water is now stored antecedent to filtration, and storage has been shown to improve water bacteriologically, to a remarkable extent. The final filtration process reduces the number of bacteria in the unfiltered water by about 98 per cent. In these circumstances it appears to be in the highest degree improbable that Morgan's bacillus (No. 1) can ever be present, in the London water, as delivered to consumers.

Cholera Vibrios.

The conclusions of the researches detailed in the report are the same as those given in last year's report (see BRITISH MEDICAL JOURNAL, July 10th, 1909, p. 87).

BRITISH PHARMACEUTICAL CONFERENCE.

THE forty-seventh annual meeting of the British Pharmaceutical Conference opened at the Botany School, Cambridge, on July 26th, under the presidency of Mr. FRANCIS RANSOM, F.C.S. (Hitchin). There was a large attendance of members and delegates from all parts of the United Kingdom. The following account of the proceedings is abstracted from the full report which appears in the *Pharmaceutical Journal*.

Addresses of Welcome.

Dr. A. W. WARD (Master of Peterhouse and Deputy Vice-Chancellor), in welcoming the Conference to Cambridge, said that in the circular that had been sent out Peterhouse College had been correctly described as the oldest of the Cambridge colleges, but they did not owe their extremely long life to any special connexion with the medical profession. They had some distinguished members of that profession on their roll. They had now no doubt whatever that they had admitted as a fellow commoner to their high table the discoverer of the circulation of the blood; and another member of the college was Sir Thomas Browne, one of the wittiest and most humorous of men, who occupied the distinguished post of President of the College of Physicians. A third medical man of eminence whom he could recall as having belonged to their college belonged to an earlier date. He was so able a man that the critics would not allow him the credit of the book which he wrote of, hence Pope's famous line, "Garth did not write his own Dispensatory." Dr. Ward understood that the Conference numbered something like a thousand members, and included teachers and examiners in a branch of medical research and practice of which the importance was certainly not underrated in the present day, especially after the recent action taken by the General Medical Council, which extended into ranges of medical inquiry which could not have been dreamt of when the association was founded. They would find a very great development in recent years in their large and flourishing medical school, a development in which the university, aided by the benefactions, had striven to keep abreast of the times in the appliances for medical study, and they would see what a botanical laboratory they now possessed; and he hoped they would be able to pay a visit to the botanical garden, one of the best-managed institutions in connexion with the university. That Conference typified the connexion between scientific research and the national needs, but there was another connexion which had been brought to his mind by observing that one of the papers to be read related to John Ray, who exemplified the connexion between letters and science, which was one of the features of that university on which they all set the greatest value. He was a man almost as distinguished in the literary presentment of his work as in the work itself.

The MAYOR OF CAMBRIDGE and Professor SEWARD also welcomed the Conference.

Presidential Address.

Mr. FRANCIS RANSOM delivered his presidential address, in which he dealt with some aspects of pharmaceutical research of the present day, and endeavoured to draw attention to certain directions in which progress might be anticipated. No real advance in any branch of science could be expected unless adequate attention were paid to the education of those who are to be responsible for its development. It could not be too often pointed out that true education did not consist in the accumulation of a large number of facts, but in so training the mind that it should be able to regard in true proportion the significance of all facts which might be presented. It was gratifying to see that the universities were now offering increased facilities to those who desired to study certain branches of science directly connected with pharmacy. He wished to emphasize a truth which, although generally acknowledged, had not been so fully acted upon as it deserved. In the words of a past-president, the late H. B. Brady, "the attainments of the pharmacist must be complementary to those of the medical practitioner." That was profoundly true not only as referring to the everyday work of the pharmacist, but also in regard to the prosecution of original research. In looking back on the vast

amount of work done during the last fifty years by pharmacologists on the one hand and chemists on the other, the question arose whether they might not have seen even more valuable results if there had been some more definite organization to bring together the two classes of investigator. New remedies were constantly being introduced, and while some seemed destined to find a permanent place in medical practice, others after a few years disappeared altogether, or were restricted to very limited employment. Medicines, like costumes, were subject to the vagaries of fashion. This might to some extent be accounted for by the changing conditions of life which, while eradicating one disease, might encourage another. As, however, many of these remedies claimed to cure complaints which were always with us, their fluctuating reputations must depend also upon other causes. In some cases the therapeutic action obtained by the first observer had been found wanting when tried by others, and that which seemed likely to prove a valuable agent had been discredited. In other cases principles of known activity had been separated by the chemist, but having failed to obtain general recognition by the medical profession the drug was speedily forgotten. In order to establish the value or worthlessness of any remedy organized experimental investigation should be undertaken by the physiologist to determine its action, by the pharmacologist to confirm its remedial value, by the chemist to determine its composition, and by the pharmacist to devise suitable preparations. In many cases the botanist was also required to ascertain the species or variety of the plant from which it was obtained. On looking through the *Year Books of Pharmacy* one saw records of an enormous amount of work done by chemists and pharmacists, both in this and other conntries. A large portion of this work had been utilized by the compilers of pharmacopoeias, and in other ways had been rendered of practical value. There remained, however, much valuable work which did not appear to have been adequately recognized by medical men.

In the cultivation of medicinal plants much had already been done, by the aid of practical botanical knowledge, in effecting improvements on the original strain. By varying the conditions of growth, by hybridization, and by careful selection of seed, remarkable results had already been obtained. Cinchonas offered perhaps the best example of what could be done in this direction, the alkaloidal content of the barks cultivated in the East showing a large increase on those growing in the native forests of South America. The attempt to control the proportions of the different alkaloids present, although not yet crowned with success, offered a promising field for further research. Coca afforded another example of the improvement resulting from scientific cultivation in Ceylon and the East Indies.

The cause of the temporary variation in the quality of certain drugs afforded further scope for botanical investigation. For many years the jalap of commerce yielded from 10 to 20 per cent. of resin. A few years ago there commenced a gradual decline in percentage until it was difficult to obtain tubers which would yield the 10 per cent. required by the *British Pharmacopoeia*. During last year the roots became very scarce, and almost famine prices were paid for samples of poor quality. About nine months ago a sudden change occurred, importations became more abundant, prices fell, and at the same time the quality showed great improvement, there being plenty of jalap available containing 10 to 15 per cent. of resin. A somewhat similar experience had occurred in connexion with belladonna root, especially that imported from the Continent. A root containing 0.5 per cent. of alkaloid was at one time obtainable without difficulty, and 0 6 per cent. was occasionally met with. Then for some years it was difficult to find any containing 0.4 per cent., many samples yielding only about 0 2 per cent. Recently there had been some little improvement, but there was still great difficulty in finding root of a high percentage. In both jalap and belladonna it was impossible to form any trustworthy opinion from general appearance as to the value of the drug. Whether the variations were due solely to the seasons or whether there were other conditions affecting the constituents of the drugs was a subject inviting investigation. There were, however, other questions to be decided in the valuation of drugs besides the estimation of what were usually considered to be the active constituents. If the active constituents of drugs could be separated in a pure state, what further use could there be for tinctures, extracts, and other preparations which undoubtedly contained material which could have no medicinal value? It was found, however, that the demand for these somewhat crude preparations still continued, not only in these cases in which no definite active principles had been separated from the drug, but also in such as cinchona, belladonna, and nux vomica from which alkaloids possessing well-defined physiological activity were readily available. If all the beneficial results of belladonna. cinchona, and nux vomica could be obtained by the employment of the separated alkaloids, the sooner the galenical preparations of these drugs became obsolete the better. As, however, there appeared no prospect of these preparations being discarded, it was the duty of the pharmacist to ascertain as far as possible the best methods for their production.

Proceeding, the President said the standardization of disinfectants was a subject which had recently received much consideration. A true disinfectant must not be simply a germicide, but also have the power of decomposing and rendering innocuous the poisonous substances produced by the micro-organisms of disease. The conditions in which the disinfectants were to be used have also to be considered, such as the temperature during the process of disinfection, the presence of foreign substances, and the variety of micro-organism which was the cause of the trouble. Neither the chemical nor bacteriological processes which had hitherto been devised seemed to be applicable in all cases, although for specific purposes comparisons of efficiency might be deduced. Another subject of deep interest to pharmacists, although outside the scope of their ordinary work, was the relation of chemical constitution to physiological action and the production of synthetic remedies. Although the time was probably still far distant when the medical man would be able to rely entirely on the chemist for the synthetic production of compounds possessing any required physiological activity, some progress had already been made in this direction. In the case of ergot an active principle (*p* hydroxyphenylethylamine) had recently been separated from the aqueous extract, having the power of increasing the blood pressure. This compound, which could be produced synthetically, was found to bear a close resemblance in constitution to adrenaline, which had the same physiological action. By thus comparing the constitution of active principles from different drugs similar in physiological action, it might be possible to produce a synthetic remedy having the advantages of each and free from any deleterious properties. Thus eventually in the distant future, when chemistry and physiology had sufficiently advanced, it might be possible to build up synthetically all the remedies that may be required. The progress in pharmacy and pharmaceutical research was, or at least should be, to a large extent reflected in successive editions of the official pharmacopoeias. As the *British Pharmacopoeia*, with its Indian and Colonial Addendum, was now the official guide throughout the British Empire, it was of supreme importance that it should be compiled by the authority of those whose scientific and practical knowledge render them the most competent to perform the work. The *British Pharmacopoeia*, as stated on the title-page, is published under the direction of "The General Council of Medical Education and Registration of the United Kingdom." Although in the preface to the last edition an acknowledgement is made of the assistance rendered by "a Committee of the Pharmaceutical Society of Great Britain," it was the members of the General Medical Council who were solely responsible for its production. In this respect the *British Pharmacopoeia* differed essentially from those of most other countries. By reference to those issued in recent years he found that in nearly every instance the national pharmacopoeias were revised by commissions on which pharmacists as well as medical men were represented. In the case of the United States of America the Convention was almost equally divided between representatives of medicine and pharmacy. In most of the other countries it would also be found that pharmaceutical associations and colleges sent representatives, who not only advised but had direct responsibility in the revision. In former times the education and experience of the medical man gave him a much more

intimate acquaintance with pharmacy than at present, and it would appear that the changed conditions were hardly sufficiently recognized in this country. The fact that the General Medical Council had invited the assistance of the Pharmaceutical Society was a step in the right direction, but he ventured to suggest that a more direct recognition of pharmacists in future revisions would be found to embody more fully the results of pharmaceutical research in our national *Pharmacopoeia*. In order to make the *Pharmacopoeia* imperial rather than national in character it would also seem desirable that India, Canada, and other colonies should appoint medical and pharmaceutical representatives, who should also have direct responsibility in the revision. During the past year a conference had been held between representatives of the British Medical Association and of the British Pharmaceutical Conference, with a view to forming a joint standing committee "to collect data and to promote the realization of aims found to be held in common by both bodies." It remained for the members of the two associations, if they approved the scheme, to elect at their respective annual meetings representatives to serve on this joint committee. As there were many objects which the two associations had in common it was much to be hoped that the committee might be appointed, and there would be an opportunity during the present session for their members to discuss the matter. Although not contemplated for this specific object he would suggest that this or a similar appointed joint committee might be of much value in organizing research work, and thus bringing together medical men and pharmacists for the purpose he had mentioned earlier in his address. They issued every year a list of subjects upon which it was suggested that work should be undertaken. Would not these suggestions be of increased value if they emanated from a committee on which both associations were represented? By providing the means of putting the medical man and the pharmacist into direct communication he believed that such a committee might render much assistance in the promotion and prosecution of original research.

Report of Executive Committee.

Mr. E. SAVILLE PECK read the report of the Executive Committee of the Conference, in which it was stated that at the annual meeting at Newcastle, after the discussion upon the question of confining the dispensing of medical prescriptions to pharmacists, the following resolution was unanimously carried:

> That this matter be referred to the Executive Committee to consider, and if thought desirable to confer with the British Medical Association in reference to it.

After considerable correspondence, extending over several months, a conference was arranged, and took place on Thursday, May 19th, at 429, Strand, the offices of the British Medical Association, under the chairmanship of Mr. Edmund Owen (Chairman of Council of the British Medical Association). There were present, as representatives of the British Medical Association, Dr. Edwin Rayner (Treasurer), Dr. Munro Moir, Mr. C. R. Straton, Dr. C. H. Wise, Dr. J. H. Taylor, Mr. Smith Whitaker (Medical Secretary); and as representatives of the British Pharmaceutical Conference, Messrs. J. F. Tocher (ex-President), H. Wippell Gadd, G. C. Druce, W. F. Wells, R. Wright, A. McMillan, F. W. Gamble, C. T. Allen, J. Righton, T. Maltby Clague, and E. Saville Peck (Honorary Secretary). Mr. Smith Whitaker reported that the conference was the outcome of correspondence between the British Pharmaceutical Conference and the Council of the Association, through its Medico-Political Committee. The discusssion, which was both interesting and valuable, turned principally upon:

(*a*) Medical dispensing, its extent, whether it should be transferred to pharmacists, and, if so, how the transfer could be effected.
(*b*) The nature and extent of prescribing by unqualified persons, and the means by which it may be prevented.
(*c*) The possibility of co-operation in action concerning the sale of dangerous, secret, or useless nostrums.

The question was considered as to the expediency of forming a Joint Standing Committee, composed of members of the British Medical Association and the British Pharceutical Conference, to collect data and to promote the realization of aims found to be held in common by both bodies. It was eventually decided by the Conference that the members of the Conference should recommend to their respective bodies the institution of a Joint Standing Committee, consisting of at least ten members of the British Medical Association and ten members of the British Pharmaceutical Conference. The Conference left in the hands of the chairman and the secretaries the work of preparation leading up to the institution of the said Joint Standing Committee. The Executive recommended the members of the Conference to proceed to the institution of this Joint Standing Committee, and suggested that those who were selected to represent the British Pharmaceutical Conference at the meeting in May be elected to serve on the Joint Standing Committee.

Committee of Medical Men and Pharmacists.

At the final meeting Mr. E. F. HARRISON moved the following motion:

> That the British Pharmaceutical Conference appoint ten representatives to form, with ten representatives of the British Medical Association, a Joint Standing Committee, to promote the realization of aims found to be common to both bodies.

He explained that this motion was the outcome of a paper read by Mr. Tocher at a meeting of the Conference last year. He detailed the negotiations with the British Medical Association on the matter, and said they owed Mr. Peck very hearty thanks for what he had done in connexion with the matter. The names of the proposed committee were Messrs. Gadd, Druce, Wells, Righton, McMillan, Gamble, C. T. Allen, Clague, and the two Honorary Secretaries.

The resolution was carried unanimously.

Election of President.

Mr. W. F. Wells of Dublin was elected President for the ensuing year.

LITERARY NOTES.

IN the list of the Oxford Medical Publications which are to appear in the autumn is a *History of Medicine*, in two volumes, by Professor Max von Neuburger of Berlin, translated by Dr. E. Playfair. This is a large work dealing with the history of medicine from the earliest times. The first volume will be published early in October, with an introduction by Professor Osler. It deals with medicine from the various periods up to the Middle Ages. Other works in the same series are Volumes V and VI, *System of Syphilis*, edited by Mr. D'Arcy Power and Mr. J. Keogh Murphy, Vol. V dealing with syphilis of the skin, eye, ear, nose, and throat, and Vol. VI dealing with syphilis with regard to the public services; *Handbook of the Surgery of Children*, being a translation by Mr. Keogh Murphy of Professor Kirmisson's well-known work; *Treatment of Fractures*, a large work by J. Hogarth Pringle; *Clinical Pathology*, by T. J. Horder; a *Textbook of Massage*, dealing with the necessary anatomy and physiology, as well as the theory and work of massage, by Miss L. Despard; *Puerperal Infection*, a large and complete monograph, by A. W. W. Lea; and *Practical Organic Chemistry*, by A. M. Kellas.

The fourth number of the *Baby's World* has just appeared, and fully justifies the description given on its title-page, which tells us that it "aims at being a never-failing source of information with regard to everything a mother requires to know about herself and about the proper feeding, clothing, management, and education of her children." It is, in fact, a *vade mecum* of baby-lore for mothers and nurses, not only in these islands, but throughout the empire. Every page of this useful and practical little magazine contains valuable information for those in charge of children, and every phase of child-life at home and abroad is dealt with in the sensible and healthy spirit which is its distinguishing characteristic. The beauty of the *Baby's World* is greatly enhanced by the numerous exquisite photographs of children with which it is illustrated. The *Baby's World* is edited by J. Johnston MacGregor, M.D., F.R.C.S., and is published at 12, Burleigh Street, Strand.

British Medical Journal.

SATURDAY, AUGUST 20TH, 1910.

THE EVOLUTION OF THE NURSE.

THE death of Florence Nightingale, of whose career some account appears elsewhere in this issue, naturally evokes a memory of the change that has taken place in the last fifty years in respect of nursing arrangements and in the characteristics of the persons by whom they are carried out. By the general public this change is commonly attributed to Miss Nightingale, who, on that account, has sometimes been called the mother of nursing, even by persons presumably cognisant with the real facts.

Neither great reforms nor great discoveries are ever the work of an individual; they emerge from the froth of a fermenting mass in which a leaven has been silently working; and then come to be identified with the name either of the individual who first gave them a shape recognizable by the unlearned, or who was loudest in their description, or whom some accident made conspicuous in connexion with them. In the case of Miss Nightingale two of these alternatives came into operation. The tragic events in which she played so noble a part served equally to convince the public of the great things which might be expected from a reform of nursing, and to gain for Miss Nightingale in connexion with it a renown which she being a woman who hated publicity, was herself far from seeking.

But that reform was already in progress, and Miss Nightingale, much as she contributed to its success, was merely one of its products, not its originator. It was doubtless the outcome of many circumstances and the thoughts of many persons, but was more directly due to the new spirit permeating the world of medicine in the early decades of the nineteenth century. This had led, among other things, to discontent among medical men with the kind of assistance then available, and thence to the foundation of the Kaiserwerth Institute in Germany, of the St. John's Sisterhood for the benefit of King's College Hospital, and to the introduction of improved nursing arrangements at St. Thomas's Hospital under Mrs. Wardroper.

But, although this reform was in progress before Miss Nightingale commenced her labours, she undoubtedly both hastened and guided it. She was a worker rather than a writer or talker, but we have her own record of her notion of what a nurse should be. She scoffed at the idea that a disappointment in love, the want of an object, a general disgust or incapacity for other things, sufficed to turn a woman into a good nurse, or that nursing could be learnt in half a dozen lessons. It took five years to make a woman fit to hold a responsible position. A good nurse, she said, must be a good woman, and a good woman was one who gave her patients her best intellectually, morally, and practically. A patient afforded a threefold interest: intellectually, as necessitating the closest observation of facts, which were explained by lectures and clinical teaching; morally, as a fellow creature to whom either moral good or moral harm must be done; and technically, because each patient was an object lesson in what the nurse must learn to do under the orders of the doctor.

Miss Nightingale was certainly a keen advocate of the highly-trained nurse, but whether she would have approved of certain latter-day developments is another question. For many years past her knowledge of the evolution of the nurse was gained second-hand. No unfavourable criticisms which she may have heard can, however, have surprised her, for in her *Notes on Nursing* she pointed out to her readers an immense number of shortcomings and faults of which they were liable to become guilty, and includes in her references the source of practically every complaint ever heard at the present time either from doctors or patients.

The net outcome of the changes that have taken place in the fifty years which have elapsed since that book was written is highly satisfactory in some respects, but almost equally unsatisfactory in others. Nursing is now a definite occupation, competing for recruits almost on precisely the same footing as other occupations for women. It is attracting a much smaller proportion of ladies than was the case some years ago, and heads of some great institutions are reported to be finding a difficulty in securing probationers of the kind they would desire. In the hospitals the nursing is perfect from a technical point of view, but there is also in most of them some lack of the kind of spirit commonly associated with the name of nurse.

That there should be a tendency to regard patients less as specimens of suffering humanity than as subjects of study is almost inevitable when the primary qualification for admission to a school is an ability to acquire scientific knowledge, and not natural aptitude for tending the sick. If there were none but hospital patients to be considered it is quite likely that hospital authorities would impose far less study on their nurses, and be content with very much less knowledge on their part, and thus be able to choose a different class of woman for admission to their schools.

All the great hospitals, however, rightly or wrongly, cater also for the needs of the general public by training and certifying nurses. These nurses, they know, will eventually work either as independent individuals or as occupants of official positions demanding the most varied kinds of knowledge. It is natural, therefore, that they should desire to secure for their pupils every kind of knowledge of which they are likely to have need. In this way the schools are led to place in the background all considerations other than those of ability to pick up technical skill and pass examinations.

The lines on which these schools are conducted vary and the final result is that the nurses placed at the disposition of the public and of medical men differ as greatly in the extent of their knowledge as in point of general education and social position. It is this mixture of class which makes it so difficult for the public to determine for itself how it should treat the nurses who enter their houses, and it is the same mixture of class, or, rather, absence of an assured position in the social grade, which leads many nurses to create difficulties of sundry kinds.

Owing to the same causes and the multiplicity of schools, it is quite impossible for any medical man except after considerable experience of a nurse's

actual work, to feel certain of her capabilities and the extent of assistance which he will receive from her. In that fact we have the main reason why the British Medical Association has joined hands with the leaders of the nursing world in calling for registration of nurses and the establishment of a Central Nursing Council.

MODERN MIRACLES OF HEALING.

A FAMOUS man of science who died not many years ago is reported to have said that he would be satisfied with a dreamless sleep after death if he could be awakened once every century or so and remain alive long enough to see the advances that had been made in the intervals. If Carlyle could have this privilege—one for which he probably would care nothing—accorded to him he might add to his famous article "Characteristics" a paragraph on the wide spread of faith healing in one form or another which is one of the most notable features of the present day. What he would have thought of it, it would perhaps be rash to conjecture, but it is certain that he would have recognized it as a fact. If human testimony can be accepted as proof of anything, cures are still wrought, as they have been as far back as the history of mankind can be traced, by "metaphysical aid"—by which phrase we do not mean supernatural but preternatural agencies. "Mental healing" to the physician is the effect of the operation of the mind on the body, and as such it is interesting as a manifestation of a force as to the nature and action of which we have little or no knowledge. It is unscientific, however, to ignore such facts because we do not understand them; on the other hand, we need not accept them as miracles because we at present are unable to furnish an explanation.

Rational medicine includes not merely a knowledge of the operation of drugs and other therapeutic agencies, it embraces everything that has a healing, or even soothing, agency on the manifold processes of disease. We know that the emotions produce physical effects. We know that shock will restore activity to a palsied limb; that fear will sometimes exorcise the demon of gout; that excitement will make a soldier in the heat of battle insensible to a wound; that love stronger than death will make a weak frame bear strain and fatigue under which it would sink but for the strong feeling which stimulates it to effort; that newborn hope or sudden happiness will brighten the flame of a life which seems to be flickering out. In these and the like conditions spirit triumphs over matter. That it often does so, at least for a time, in disease is the common experience of all whose business is the treatment of the sick. The difficulty is to know when and how to apply this potent, but elusive, remedy.

In the JOURNAL of June 18th the subject of faith healing was discussed from various points of view. All the eminent writers whose views were there given to the profession recognized the power of faith. The interest with which these essays were read is shown by the number of communications about them that have been received. Congratulations have reached us from America and criticism from Canada. In the latter case the writer objected to certain remarks which, in his opinion, "were rather pointed toward some Roman Catholic thought in a way which was offensive." We certainly have no wish to offend the religious feelings of any one, and we have always been careful to keep the JOURNAL free from any tinge of theological controversy. But the miracles of healing said to be wrought at Lourdes are so remarkable in themselves, and are recorded in such detail, that it was impossible to avoid all reference to them. We therefore invited two writers who are recognized by the Roman Catholic community as at once representative of their thought and highly competent critics to deal with the subject from their point of view. The papers by Abbot Gasquet and the Rev. Herbert Thurston, which appear elsewhere in this issue, may be said to state the case for the miracles in a reasonable and temperate manner, that must give food for thought to all but those who, with Hume, think that miracles are violations of the laws of Nature, and are therefore not to be believed though one rose from the dead.

But do we as a matter of fact know the "laws of Nature" so fully that we can decide offhand that anything which happens to be contrary to general experience is a "violation" of these laws? The laws of Nature of which we speak with such assurance are, after all, of our own making. They are forms of thought which represent our knowledge of things at a given time. They are therefore liable to change as knowledge grows. Twenty years ago the Roentgen rays and wireless telegraphy would doubtless have been said by many to be contrary to the laws of Nature. In the domain of the healing art itself the present generation has witnessed advances which to many of our forerunners would have seemed miraculous. At the present day medical science can furnish a rational explanation of the vast majority of the "miracles" of Lourdes. If it cannot yet explain all, that is due to its limitations. An experienced doctor sees many things in the course of his practice which he cannot explain; but he does not on that account straightway accept them as miracles, any more than he looks upon the wonders wrought by Mr. Maskelyne as the work of a supernatural power. This, we venture to think, is the proper attitude of science in the presence of mysteries and miracles. If the fact seems to be proved by sufficient evidence it should be examined with an open mind in every detail.

First of all, the testimony must be most carefully sifted and weighed. As Munsterberg showed, even persons of the highest education and trained acuteness of observation can seldom give a perfectly accurate account of a thing which has happened under their very eyes. Where man's feelings and passions are strongly concerned he is apt to be not only deceiving but self-deceived. Hume justly says: "Where men are heated by zeal and enthusiasm there is no degree of human testimony as may not be procured for the greatest absurdity; and those who will be so silly as to examine the affair by that medium, and seek particular flaws in the testimony, are almost sure to be confounded. It must be a miserable imposture indeed that does not prevail in that contest." We hasten to say that we do not wish to insinuate that there is any wilful deceit in the cases recorded by Dr. Gasquet and the Rev. Herbert Thurston. The case of M. Gargam related by the former seems to be as well authenticated as anything could be. In the present state of feeling of a large proportion of the French people in regard to religion, the evidence must be strong indeed that secured what is virtually a verdict for a miracle from two courts of justice.

But is it a miracle? There's the rub. Traumatic neurosis, as we all know, is full of surprises even for the expert neurologist; and recoveries from conditions

apparently as desperate as that of M. Gargam have occurred without any intervention that could be called miraculous. Nor are we prepared to accept the cases quoted by the Rev. Herbert Thurston, remarkable as they are, as miracles. The occasional rapid healing of fistulae and sinuses is familiar to all surgeons; nor is the cessation of otorrhoea with consequent improvement in hearing outside the experience of otologists. What we should like to have fuller proof of is the instantaneous occurrence of these cures. Even at Lourdes the recorded cures are seldom instantaneous, and not infrequently they are incomplete.

This brings us to consider how such effects are produced. That diseases of purely nervous origin may be cured instantaneously by many natural causes is well known. We have no difficulty, therefore, in believing that the lame have been made able to walk, that sores have been healed, and that pain has been charmed away, under the influence of nervous centres stirred into violent activity by religious emotion. All the surroundings amid which the patient is placed at Lourdes tend to heighten this effect. The wonder is that in proportion to the numbers of sufferers who flock thither for relief the cures are so few. Dr. Maurice Gaud, in a very interesting thesis entitled "Processus Psychiques de Guérison," presented to the University of Lyons in 1907, gives an analysis of all the "cures" officially recorded as having occurred among members of what is called the National Pilgrimage in 1906. Among 1,200 sick persons there were only 30 cases in which any improvement was noted. Of these the majority were suffering from purely nervous affections. Among the others in which some beneficial effect was noted, the disease was not cured, though the symptoms were to some extent relieved. Besides purely nervous ailments, there is a nervous element in most organic diseases which manifests itself in trophic or other disturbances, and it is likely enough that this will be acted on by the influences of the place. Even in tuberculosis and cancer a feeling of betterment is often produced by the hope excited by the use of a new remedy. This is the secret of the success of quack medicines—an apparent success which may puzzle the doctor while it temporarily rejoices the patient. But the disease itself remains uncured.

To conclude, the mechanism of the miracle is stimulation of the nervous system. How that mechanism is set in action, and how it can be made to work in the right way to produce the effect aimed at is another matter. That is the problem which the medical profession has to solve. If it simply buries its head in the sand and refuses to see that faith-healing is a fact, it will, in the words of Carlyle, be awakened "in a terrible *a posteriori* manner," to find that the influence which science ought to have has been to a greater or less extent diverted to other quarters.

MEDICAL WITNESSES AND CORONERS' INQUESTS.

WE have frequently had occasion to notice the methods adopted by some coroners when deciding as to whether to hold inquests on cases reported to them. Their decisions at such times have not always given satisfaction, and a further investigation of facts has appeared to indicate that an exercise of that good judgement which the importance of such cases demands and the public naturally expects to be shown has been conspicuously absent. The fact is now generally recognized that if the law allowed coroners to consult medical practitioners, and so procure their professional opinions as well as to pay suitable fees for them, many cases in which inquests are now necessarily held might at once be ended without further legal investigation. Thereby less distress would be occasioned to relatives of the deceased, as well as considerable unnecessary expense avoided.

We wish it, however, to be distinctly understood that, however desirable some alteration in this respect may be, such is not yet the law, as no coroner can at present insist on any written reports by any possible witnesses being sent to him previous to an inquest, nor has he authority to give instructions or orders of any kind whatever to any medical practitioner until he has decided that it is his duty to order an inquest to be held. Notwithstanding this want of power on the part of coroners to enforce their requests for a medical opinion in reference to cases they have under consideration, we believe it has been, and still is, the usual custom for medical practitioners to furnish coroners with all reasonable information so as to help them to decide in very many cases as to the necessity of an inquest or the reverse, and this without any fee whatever for their professional assistance. This ready habit of many members of the medical profession would appear to be on many occasions grossly abused by some coroners. They are very ready to take advantage of the liberal disposition of many ordinary medical practitioners, to procure from them the professional information they are urgently in want of, but having done so, they forget not only to acknowledge it with even the most brief thanks, but at once order an inquest to be held, and procure further medical assistance from other quarters, for which, after such inquest, they have to pay all statutory fees which can be then claimed. Several cases illustrating this high-handed practice have recently been brought to our notice, and of these we will give brief accounts.

1. A pauper was found dead on a country roadside at night. A medical practitioner received directions from the coroner (through his officer) to go to view and examine the body, and report to him in writing as to the cause of death. This request was complied with, and a report was made to the following effect—namely, that no opinion could be formed as to the cause of death of the deceased, as no marks of violence could be discovered on the body. The doctor who made this examination and written report in reference to it heard nothing more of the case, and was not even thanked for his professional services, which involved a journey of several miles, we believe, at night.

2. A medical man in country practice was called out of bed to visit what was represented to him to be an urgent case; on arriving at the house of the supposed patient, he found a middle-aged man dead in his bed, and it was reported that the deceased had just died very suddenly. The sergeant of police reported this case to the coroner of the district, who then instructed his officer to call on the doctor (namely, the one who had been summoned to the house of the deceased at night) and ask for his report. This report, made in writing, was conveyed to the coroner; it was to the effect that the death of the deceased was due to heart failure following dysentery. The result of this was that an inquest was subsequently held. Another practitioner was ordered to make a *post-mortem* examination, attend the inquest, and give evidence thereat. The doctor who first visited after death of

the deceased, and who as soon after as possible reported on the case at the special request of the coroner, was altogether ignored; he was not called at the inquest nor was he summoned to attend. He now complains of having received neither thanks nor fee for his report made for the coroner's use, and this at the special request of the latter.

A medical practitioner in a provincial district attended an old lady for several weeks with fracture of neck of femur. The coroner, after having received a report of the death of this patient from his own officer, sent the latter to ask the doctor for his report on the case, which was at once made and forwarded to him. This aforesaid coroner subsequently held an inquest; he did not summon the doctor who had made the written report to him to attend the inquest, but himself read this written report of the jury at the inquest, and thereby escaped his liability for any payment of fee for the same. The verdict in this case was reported to be "Death in accordance with medical evidence." No medical evidence whatever having been given, this verdict can only be regarded as a direct misrepresentation of fact.

As there is every probability that in the near future we shall see a material change in coroner's law, we venture to hope that such cases as we have here noted will no longer be possible. We are quite aware that the great majority of coroners display every desire to treat members of our profession with all due consideration and justice, and it is within our knowledge that all such coroners very reluctantly apply for the professional assistance of medical practitioners when they feel that they are unable to offer any fee for the help the latter may be in a position to furnish. It is much to be regretted that those coroners who do not appear to understand what fair justice is should fail to follow the example set by others who have had wider and longer experience, and so avoid bringing discredit on themselves by adopting ill advised and unjustifiable methods of carrying out their own public duties.

THE NATIONAL ASSOCIATION FOR THE PREVENTION OF CONSUMPTION.

THE National Association for the Prevention of Consumption and Other Forms of Tuberculosis has issued a special appeal, signed by Lord Derby (the Chairman), the Duke of Devonshire and Mr. Waldorf Astor (joint Honorary Treasurers), for help in its efforts to eradicate tuberculosis. They state that at least £5,000 a year is required to educate the people in the mode of preventing the disease. The quickest, best, and ultimately the cheapest way, they hold, is to educate the nation by means of: (1) Travelling tuberculosis exhibitions; (2) caravans with lantern slides; (3) popular lectures; (4) an information bureau for the press and public; (5) the distribution of literature. Seventy thousand people visited the Tuberculosis Exhibition in Whitechapel. It has been equally successful at Paddington, Marylebone, Cambridge, Walworth, Canning Town, Oxford, and other places. Lack of funds prevents the exhibition making a continuous tour of the country. One or two more exhibitions should, it is urged, be fitted out to visit big towns. Vans with lantern slides are needed for small towns and villages. The association has appointed a Special Appeal Committee to collect funds for an educational campaign on the lines suggested. The work will be purely educational. No grants will be made to institutions for treatment. This Special Appeal Committee now seeks the co-operation of all existing bodies; its members appeal to the numberless small subscribers to charity as well as to large donors. From time to time the committee will issue details of the plan of campaign and its progress, but in the first place it hopes to secure the help and support of organised bodies, and to create branch associations in areas where such do not at present exist. The appeal concludes: "But nothing can be done without money—£500 will fit out an exhibition; £600 will run such an exhibition for a year; £300 will fit out a caravan exhibition; £700 will run it for a year; £5 will pay for a lecture; £1 will pay for a set of lantern slides; one penny will pay for educational leaflets." The Special Appeal Committee has received a letter from the President of the Local Government Board, in which he says: The work of the National Association had, even before his visit to Whitechapel, his heartiest approval, and so likewise has its present crusade against the disease. He expresses the hope that all classes will assist in providing the necessary funds for carrying the crusade to a successful issue. Mr. Burns goes on to say that he is confident that in the measures advocated by the committee they will not overlook the welfare of the worker. "An increasing number of sanitary authorities are providing for home visits to consumptive patients, and are adopting means for the treatment and training of patients in sanatoriums. The measures which you will advocate will, I am confident, provide for assistance being offered to patients in the most sympathetic manner possible, and care will no doubt be taken to guard against the duplication of visits to persons suffering from the disease by representatives of the National Association and by officers of the sanitary authority." He concludes by wishing the association every success in its efforts. It is added in the appeal that the working men's clubs and institutes affiliated to the Club and Institute Union have almost unanimously decided to take for disposal among their members a copy of the book containing 6d. coupons. The post-office authorities have made an important concession to the committee, and have allowed the issue of small books of a total value of 10s. in which contributions of one penny can be collected by means of unused postage stamps. Any person who will help the committee and its work can have a copy of this book on application. Friendly societies and insurance companies are recognizing that the question is of the utmost importance to them, both from a financial and social standpoint, and are giving what aid they can to the committee. The Billposters Associations of Great Britain have also undertaken to assist by posting quite free of charge many thousands of posters drawing attention to the main facts in connexion with the disease and the movement for its extermination. Contributions, however small, should be sent to the Honorary Treasurers, Special Appeal Committee, 20, Hanover Square, W., and the Honorary Secretary will be pleased to furnish any particulars which may be required.

A CARAVAN MISSION OF HEALTH.

EVERY one nowadays has a mission; it is an age of "crusades" and philanthropic people vie with each other in devising new means of attracting attention. The Women's Imperial Health Association of Great Britain, the president of which is Muriel Viscountess Helmsley, is about to send caravans about the country from which lectures and demonstrations on health, illustrated by biograph pictures and views, will be delivered by competent lecturers in the towns and villages of England. The first of these caravans, happily named "The Aurora," will start from the

Botanic Gardens, Regent's Park, on Saturday, August 20th, 1910, at 12.30. Its departure will be christened with a flask of pure water by Miss Lena Ashwell. The Aurora will then forthwith proceed up the Thames Valley on its way to Bath. It is the object of the association to deal with the health question at its foundation; it therefore intends to teach the mothers of England how to rear and nurture their children that they may become strong and healthy citizens. A special appeal will be made to young girls in order that they may better fulfil the duties which matrimony entails. It is emphatically declared that the association has no fads, no axes to grind, and that it is not "anti" anything nor "pro" anybody. We are glad to know this, for these health missions so often degenerate into the propagation of fads, the dissemination of "anti" ideas and the glorification of individuals. The names of Sir Lauder Brunton, Sir Anderson Critchett, Sir William Bennett, Dr. J. Mitchell Bruce, Mr. McAdam Eccles, Dr. Kelynack, and Mrs. Scharlieb, on the list of vice-presidents, form a guarantee to the medical profession that the association will be pursued in a spirit of broad philanthropy, and that its work will be conducted under the guidance of scientific knowledge.

SULPHUR WATERS AND PURIN OUTPUT.

IN this issue of the BRITISH MEDICAL JOURNAL will be found, in a paper by Dr. David Brown, of Harrogate, an account of some investigations undertaken with a view to throwing some light on the physiological effects, as gauged by chemical methods, of the imbibition of sulphur waters. Researches of this kind involve the most delicate manipulations, much labour on the part of the investigator, and the loyal and patient co-operation of an invalid or some other human instrument, so it is not remarkable that they should be carried out with comparative rarity, or that in this particular instance the investigation should not have been applied to a sufficient number of individuals to allow perhaps of definite conclusions being drawn. So far as the researches go, they would seem to indicate that the drinking of natural sulphur water somewhat lessens the output of endogenous xanthin bases and materially increases both endogenous trioxypurin and the exogenous purins recognizable in the excretions. Whether this conclusion should be held to have any direct bearing on treatment by sulphur water is another question, for there is too much dispute about purin bodies, except from a purely chemical point of view, to admit of any theory as to their importance being regarded as finally proved. The battle which was waged a year or two ago on the question of the advantage of securing entire absence of purins from the diet of various patients ended partly for want of fresh combatants, partly because the conclusions reached on different sides seemed, for the moment at any rate, irreconcilable. The impression left on the minds of impartial readers, however, would seem to have been that the advocates of purin-free food had failed to prove their case, and that the presence or absence of purin in food had not been shown to make any material difference in securing perfect nutrition unaccompanied by chronic functional disturbance of any kind. If this be the case it might further be argued perhaps that artificially raising the excretion of purin bodies would not be likely to give any valuable results; but such a contention might readily be upset if clinical views to the contrary were coupled with chemical evidence of more perfect oxidation of primary metabolic products. But in any case work such as that of Dr. Brown is of value as contributing something, at any rate, towards the solution of questions of interest, and inquiries of the same character might well be undertaken in connexion with other natural waters containing conspicuous amounts of salts generally regarded as having a definite if obscurely working effect on the human system.

INTERNATIONAL CONGRESS OF ANATOMISTS.

THE second quinquennial congress of anatomists was held in Brussels on August 7th to the 11th, and was largely attended by anatomists from all parts of the world. Among those present were Professors Waldeyer and von Bardeleben from Germany, Nicolas and Laguesse from France, Minot and Huntingdon from America, Romiti from Italy, Van der Stricht from Belgium, and Professors Arthur Thomson and Paterson from England. Meetings were held in the university in the forenoons for the reading and discussion of papers, and demonstrations were given in the afternoon in the anatomy department. Some fifty papers were presented, dealing mainly with histological and embryological subjects. An important step taken at this conference was the appointing of an international committee, with Professor Mall of Baltimore as secretary, to consider and draw up an international uniform nomenclature for embryology, on the lines of the Basle anatomical nomenclature for general anatomy. Among the papers read by members from Germany, Poll presented a communication upon spermatogenesis and oogenesis in hybrids. Braus gave an interesting demonstration of the segmental distribution of spinal motor nerves to the muscles of the lateral fin of the skate, and Fetzner showed a model and sections of a very young human embryo, resembling the Peter's ovum, in which the fixation and histology of the embryo and trophoblast were excellent. Several communications from members of the German and American societies dealt with the development of the blood cells. Maximow dealt with their development in selachians and amphibians, and Frau Wera Dantschakoff with their development in reptiles. Minot's communication dealt with the nomenclature and morphology of blood cells, and he appealed for a more rational and scientific terminology than at present exists, and for the abolition of such misleading terms as "normoblasts." The papers from French anatomists included one from Lams, accompanied by a demonstration of beautiful specimens, on the fertilization and early changes in the ovum of cobaye. It gave rise to an interesting discussion upon the fate of the tail of the entering spermatozoon, in which Brachet and Van der Stricht took part. Dubreuil showed the development of the lamellae in the upper end of the femur, and the relation which they bear to the entering vessels. A number of communications from members of this society dealt with the presence of mitochondria in various tissue cells. Huntingdon and MacClure dealt with the development of the lymphatic system, and demonstrated changes in the early veins by which lymphatic channels could be formed; while Lee gave an important communication upon the implantation stages of the ovum in the various North American rodents. Huber demonstrated some beautiful corrosion preparations illustrating the morphology of the renal tubules and vessels in vertebrates. Among the communcations by British and Irish anatomists was a demonstration by Professor J. P. Hill of a beautiful series of photographs showing the growth and maturation of the marsupial ovum as illustrated by Dasyurus; Berry (Melbourne), read a paper upon Tasmania crania; Evatt (Winnipeg) advanced a new view of the homologies of the urethra and vagina in the sexes; Arthur Thomson dealt with the anatomy of the angle of the iris, and Whitnall demonstrated

a ligament acting as a check to the action of the levator palpebrae superioris, while Waterston gave a communication upon the shape of the stomach in man, and the action of formalin. A paper from Cameron was read upon the development of the anterior commissure and neighbouring parts. Most of these papers will probably be published at an early date, and hence no description of them need be given here. The congressists were invited to a municipal reception at the Hotel de Ville, and a very pleasant dinner was held one evening. Professor Dollo gave a demonstration of the magnificent collection of specimens of Iguanodon in the Natural History Museum to members, which was greatly appreciated.

SOUTH AFRICAN MEDICAL CONGRESS.

THE twelfth meeting of the South African Medical Congress will be held this year in Capetown from November 7th to the 12th, under the presidency of Dr. C. F. K. Murray, of Kenilworth. The work of the congress will be distributed among the following sections: Medicine (President, Dr. J. Bruce-Bays, Grahamstown); Surgery (President, Dr. G. Ritchie Thomson, Johannesburg); Obstetrics and Gynaecology (President, Dr. A. H. Watkins, Kimberley); Public Health (President, Dr. P. Murison, Durban); Eye, Ear, Nose, and Throat (President, Dr. A. G. Brinton, Johannesburg); Pathology (President, Dr. W. Watkins-Pitchford, Pietermaritzburg); Special Subjects (President, Dr. A. B. Ward, Bloemfontein). The following subjects are proposed for special discussion in the several sections: *Medicine:* The Modern Treatment of Tuberculosis. *Surgery:* Urinary Stone; Diagnosis and Treatment; Prevalence in South Africa. *Obstetrics and Gynaecology:* Diagnosis and Treatment of Fibroid Disease of the Uterus. *Public Health:* Aestival Diarrhoeas of South Africa. *Eye, Ear, Nose, and Throat:* Diagnosis and Treatment of Headache due to Diseases or Disturbance of the Eye, Ear, Throat, or Nose. *Pathology:* Incidence and Characteristics of Cancer in South Africa. *Special Subjects:* Hospital Administration and Organization in South Africa. The Union Parliament is expected to meet on November 4th, and during that week and the following one the Union festivities—pageant, and so forth—will be in full swing. Dr. Jasper Anderson, M.O.H. for Capetown, is Chairman of the Entertainment and Reception Committee. Dr. W. A. Moffat, the Honorary General Secretary, would be glad to be informed beforehand of the probable advent of any medical visitor who may be going out to the Cape at that time.

THE RELATION OF LIGHT PERCEPTION TO COLOUR PERCEPTION.

ON June 30th, 1910, Professor Starling read to the Royal Society a paper on this subject written by F. W. Edridge-Green. The author first pointed out that the majority of the theories of colour perception have been theories of light perception. The two subjects have been much confused. The investigation of these two classes of defective vision is much facilitated by the use of the author's spectrometer, which was described to the society. The instrument enables any portion of the spectrum lying between any two wave lengths to be rapidly isolated and exhibited. The micrometer screws which operate the two shutters are furnished with drums, which are so graduated that they read in wave lengths. When examined with this instrument, a normal individual will, as a rule, name six distinct colours, and will mark out by means of the shutters about eighteen monochromatic patches. The paper dealt with the defects the instrument detected in persons with abnormal colour vision. He laid great stress upon shortening of the red end of the spectrum. Individuals with a shortened spectrum could be compared with those who could not hear very high or very low notes. There are some who cannot appreciate the shrill notes of a canary or of Galton's whistle; others, again, cannot hear the low pedal notes of the organ. Similarly, we have individuals whose spectrum may be shortened either at the red or the violet end. Such a person, looking at a red light of low refrangibility, sees no light at all. His sensorium is not stimulated, all is black. Such persons confused pink and blue. In cases where there is a real colour blindness, it is essential to differentiate between perception of light and perception of hue. The spectrometer enables this to be done. Cases of so-called green blindness are difficult to explain. They are simply cases of dichromic vision without shortening of the spectrum. If we give such a case colours to compare which differ only slightly in shade but are absolutely different in hue, we find that his selection of the lightest or darkest corresponds to that which would be made by a normal individual. Dr. Edridge-Green has examined every case of colour blindness which came under his notice with Rayleigh's colour-mixing apparatus. A match is made between λ 589 (sodium yellow) and a mixture of λ 670 (lithium red) and λ 535 (thallium green). The results appear to be quite independent of the power possessed by the individuals examined to appreciate colour difference. In fact normal values in persons with normal hue perception may be obtained, whereas undoubted colour blind individuals may give normal results. All dichromics are not equally colour blind. One will be readily detected by almost any test, whilst another requires the greatest care to detect at all. Such a man will make a normal match with Rayleigh's apparatus, and will pass Holmgren's test with ease. But when examined with the spectrometer he is at once exposed. He has only eight monochromatic patches instead of eighteen, and he will match spectral blue-green with a mixture of spectral red and violet. Detailed tables accompany the paper, showing the actual results obtained from persons examined with the spectrometer.

MISSIONARIES AND MEDICAL KNOWLEDGE.

THIS year's edition of the *Livingstone College Year Book* may be commended to the notice of those still doubtful of the propriety of ensuring for missionaries in semicivilized tropical countries a sound, if elementary, knowledge of surgery, medicine, and hygiene. It contains a reasoned consideration of the motives which brought the institution into existence and still underlie its work. This apologia is good so far as it goes, but we find some of the extracts of letters from missionaries which accompany it still more convincing. One of them, dealing with the old saying, "A little knowledge is a dangerous thing," puts the whole thing in a nutshell. "When you are two weeks' journey from any assistance, and see your fellow traveller sitting silent and swollen with violent toothache for days together, you fervently wish you had a pair of forceps and a dangerous amount of knowledge. And when in remote places you have a choice of burying your servant or stopping his diarrhoea, would you prefer to talk nonsense about professional skill rather than give him a dose of chloroform, even though it should be at the risk of administering one drop more or less than one who writes M.D. to his name would have done?" This exposition of the situation is sufficiently trenchant to silence most objectors. At the present day, however Livingstone College should not need to stand on its

defence. Hygiene and its bases in physiology and anatomy are being taught even to school children, and there is a first-aid class in practically every village. If such knowledge is desirable in a country owning about one medical man to every 1,400 of its population, it must be infinitely more necessary in countries whose inhabitants are daily exposed to dangerous climatic disorders as well as injuries, and where the missionary may be the one intelligent person to be found within a radius of several hundred miles. Apart from this, no one who has travelled in semicivilized regions can fail to be aware that the white man is invariably credited by natives with a knowledge of medicine, and that it is exceedingly difficult for him to avoid giving advice. The need, indeed, is so strong that almost all missionaries endeavour to obtain medical knowledge of some character. Commonly they simply read medical books for themselves, or wander unguided through the premises of some medical institution. It is very much better that they should go through a regular course of instruction at the hands of those who are most capable of teaching and of bringing home to them the true limitations of the knowledge which it is possible for them to acquire. This is the work of Livingstone College, which imposes a course of nine months' work, and accepts no one as a pupil who does not previously sign an undertaking that he will never take to himself the title of medical missionary or assume the position of a qualified medical man.

INEBRIATE REFORMATORIES.

AMONG the answers to questions addressed to Ministers circulated with the Parliamentary papers issued just before the adjournment of Parliament was one to Sir John Brigg, member for Keighley, who asked for the number and locality of the inebriate reformatories in operation in Great Britain, the average number of inmates, and the cost per case of permanently successful treatment. The Home Secretary gave the following figures for England, his department having no information regarding Scotland. There are, he stated, two State inebriate reformatories and nine certified inebriate reformatories. The average weekly charge for inmates in the State reformatories for staff and maintenance in the year ending March 31st, 1910, was 21s.; the daily average number of inmates was 92. In the certified reformatories the average weekly charge for inmates during the year 1909 was 15s. 10d.; the daily average number of inmates was 892. Mr. Churchill added: I think my hon. friend will see that it would be impossible at any given time to say how many persons discharged from reformatories had been "permanently benefited."

A REMARKABLE CASE OF FRACTURE.

WE live in a time when signs and wonders in the healing of disease are, if we are to believe the prophets of the various cults, of everyday occurrence; when a devotee of Mrs. Eddy speaks airily of curing cases of cancer by the hundred; when consumption and other deadly ailments are conjured away by rites and incantations; and when "nerve force" can be turned on and off like water from a tap. The wonder is that any disease is left, and that Death has not thrown away his blunted and rusty scythe. In the face of the marvellous narratives, the tale we are about to relate seems almost too trivial to tell. It is also, we fear, old; but a story, like wine, often gains by age. As an instance, we may quote Hardcastle's story of "Ould Grouse" in the gun-room in *She Stoops to Conquer*, which Diggory was by special grace allowed to laugh at. How one would like to hear that story! But, alas Hardcastle, unlike him

> Who left half told
> The story of Cambuscan bold,

gives no hint of the oft-told tale for which his servant asked for preferential treatment in the matter of laughter. We feel, however, that at this silly season we may be forgiven if we bestow our tedium on our readers. We therefore tell the story in the latest form in which we have seen it. A doctor received from a correspondent who had crossed the Atlantic a letter to the following effect: "I have at last arrived here after a good passage, which presented no remarkable feature with the exception of the case of a boy who fell from a mast on to the bridge and broke his leg. The surgeon of the ship tied it up firmly with a cord, and forthwith the wounded lad was able to use his leg as before the accident. I cannot sufficiently admire the skill of the operator or the triumph of surgical art." This letter was read before a medical society, and naturally gave rise to much discussion. Had the fact not been attested by a man who was known to be thoroughly trustworthy, it would be rejected without comment. One of the members of the learned body read a paper on the subject, in which he explained in the clearest manner the physical means by which the apparently miraculous cure was wrought. The society, whether convinced or not, applauded his reasoning. Some time after the meeting a further letter was received, in which the reporter said: "I fear I forgot a trifling circumstance in my account of the case of fracture of which I told you. The broken leg was a wooden one." We do not guarantee the exact truth of this story; but it serves to point the moral which Charles II's famous question as to the fish in water impressed upon the Royal Society. Before theorizing about things let us be sure of our facts. In the history of medicine there are too many instances of ingenious explanations of unverified facts. At the present day we would particularly urge not only the public but the profession, when a cure of cancer or a new miracle of faith-healing is reported, to take nothing for granted. Let them insist on proof that it was not a wooden leg that was broken.

THE ANT IN A NEW CHARACTER.

THE ant has from time immemorial been held up to the sluggard as a model of industry, and his mode of life and methods of social administration—some of which are sufficiently drastic to satisfy even the most advanced modern reformer—have been closely studied by Lord Avebury. The ant has lately been presented, as we learn from the *New York Medical Journal*, in a new light by Captain Percy L. Jones, of the United States Army Medical Corps. We are beginning to hear much of the baleful activity of the fly in the dissemination of disease. Captain Jones's observations, therefore, which were made in the Philippines, come very opportunely as offering a possible remedy to an addition of the dangers which threaten human life. Having noticed that flies are comparatively rare in the Philippines, he ascertained that there is a species of ant which finds the larvae of the fly very much to its gastronomic taste. The way in which the ant deals with the larva is described by Captain Jones as follows: "Upon watching these ants attack fly larvae, it is interesting to note that they do so in a way which proves that they are no novices at the procedure. One will attack an extremity and apparently bite it, and as soon as the larva begins to coil and makes efforts to escape, numbers of others will immediately jump upon it, and in the course of a few moments the larva will be

apparently dead. I believe that the ant introduces some venom in the act of biting, formic acid in character, which preserves the larva as food until such time as the ant needs it—cans it, in other words. As soon as the struggles of the larva have ceased, they haul it off to their nests and return for others. In many instances I have seen them carry away pupae. It will be interesting for the reader to procure a few maggots and place them over an ant bed." But what would the antivivisectionists say? This ant has other excellent qualities. It is said to destroy bed bugs as well as flies. It might be worth while trying it for this purpose in London. There is one cloud on the bright horizon of fly destruction opened up by Captain Jones's observations. Mr. Banks, the official entomologist in the Bureau of Science in Manila, doubts whether the particular species of ant which takes this field of hygienic industry for its province is found in the United States; indeed, it does not seem to be yet classified. Captain Jones, who is evidently a practical man, has considered the expediency of introducing the Philippine ant into countries where flies are recognized as enemies to health. He thinks that further study of the insect's habits is needed before it is indiscriminately let loose everywhere on flies, for, besides its qualifications as a scavanger and as a destroyer of flies, it may have undesirable propensities, such as an inclination to consume wood and other valuable articles. We must therefore, it would seem, before calling this ant to our assistance, take heed lest we suffer the fate which has often overtaken nations which called in foreign assistance in time of invasion.

TABETIC OPTIC ATROPHY.

Dr. Henning Rönne of Copenhagen contributes a paper to *Ophthalmology* (April, 1910) on the interesting question whether tabetic optic atrophy develops from a disease of the ganglion cells or from the nerve fibres. It is, he says, quite natural that until now no solution of the problem has been reached, for the whole neuron forms a nutritive entity. If the origin is in the cells, then the nerve fibres degenerate secondarily, and vice versa. It is on this account impossible to show from a study of the pathological anatomy which of the two elements is primarily affected, or whether the disease strikes the neuron in all its parts simultaneously. The matter can, however, be approached from a clinical standpoint. In a paper in the *Arch. für Ophthalmologie* (Band lxxi, S. 51) the author called attention to the fact that in certain diseases of the eye, especially glaucoma, a field of vision may be present which so lies in the chart that the edge runs for a certain distance exactly in a horizontal direction along the nasal horizontal meridian. It forms a field figure which Rönne has called "The Nasal Visual Field Defect," and which corresponds to the raphe which is formed from the retinal nerve fibres, which meet (?) on the temporal horizontal meridian of the retina after they have encircled the fixation point by a wider or narrower margin. It is clear that we have in this symptom a means of settling the differential diagnosis between a disease of the cell layer of the retina itself, and of the fibres of the optic nerve, because a disease of the retinal cells would not respect certain nerve bundles which lie merely in anatomical relationship in the conducting part of the nerve bundle. A disease which shows this relationship must be in the nerve fibre. The author has recently carefully examined the fields of persons suffering from tabetic atrophy, and has repeatedly found fields which point strongly to the view that the nerve fibres are affected in bundles. Professor Bjerrum has shown that this is especially true in glaucoma. The paper contains specimens of fields showing the characteristic horizontal line of limitation. If in tabetic optic atrophy the fibres are affected before the ganglion cells, it is probable that the same is true of lesions of other nerves in the body, and one can formulate the general proposition that the lesion of the ganglion cells in tabetic degeneration is a much less important factor than the involvement of the nerve fibres.

THE PROVISION OF DIPHTHERIA ANTITOXIN.

In a circular dated Aug. 15th it is stated that the Local Government Board has had under consideration the question of facilitating the prompt use of diphtheria antitoxin in the case of persons who may be attacked by diphtheria or exposed to the infection of the disease, and with that object it has made an Order, under Section 77 of the Public Health (London) Act, 1891, sanctioning the provision by the Councils of metropolitan boroughs of a temporary supply of diphtheria antitoxin and of medical attendance in connexion therewith. The arrangements with respect to the keeping, distribution, and use of the diphtheria antitoxin are to be made in accordance with the advice of the medical officer of health. In cases in which a patient is under the care of a medical practitioner, the latter should, in ordinary circumstances, be the person to administer the antitoxin. In considering the matter, the Council, it is said, should take into special account the possible requirements of the Poor Law medical officers, as it appears to the Board to be desirable, where the Council avail themselves of the powers now given them, that the Poor Law medical officers should be able to obtain from the store of the Council the antitoxin which they may require from time to time for use in connexion with patients under their care. The free provision of diphtheria antitoxin, which is authorized by the Order, must not be regarded as a substitute for removal to a hospital of a patient suffering from diphtheria, nor as implying that the patient to whom the anti-toxin has been administered may properly be retained for treatment at home, unless means are available for his efficient isolation to the satisfaction of the medical officer of health. It is pointed out that the prompt administration of antitoxin before the patient is removed to hospital may, especially if delay in removal is inevitable, go far towards preventing the attack of diphtheria from being fatal. By Article II of the Order the duties of the medical officer of health are to be deemed to extend to and to include all action by the medical officer of health in the execution of the Order, and Article III provides for the payment by the Council to the medical officer of health of reasonable compensation for such action taken by him. A similar Order is made in regard to the sanitary authorities for the execution of the Public Health (London) Act, 1891, and in regard to the medical officers of health of these authorities.

The annual meeting of the International League against Epilepsy will be held in Berlin, on October 4th and 7th, 1910, at 2 p.m., in the lecture theatre of the Psychiatric Clinic of Professor Dr. Ziehen, under the presidency of Professor Tamburini, of Rome. The business before the meeting consists mainly of the reception of the reports from the international committees upon the work of the league in the different countries, with reference to the prevalence of epilepsy, the numbers of existing institutions for epileptics, etc. Communications will also be received from Dr. Veith (Berlin) upon epilepsy and crime, and Dr. Muskins (Amsterdam) upon the patho-physiology of epilepsy.

Ireland.

[*FROM OUR SPECIAL CORRESPONDENTS.*]

LOCAL GOVERNMENT BOARD REPORT.

Boarded-out Children.

THE annual report of the Local Government Board of Ireland expresses its satisfaction that there was an increase of 309 in the number of children placed out at nurse or boarded-out by the guardians. The recent Royal Commission on the Poor Laws recommended that the maintenance of children in workhouses should no longer be recognized as a legitimate way of dealing with them, and the Board trusts that at no distant date all children who can legally be boarded-out will be placed in suitable foster homes by the guardians.

Advertising Health Resorts.

Under the Health Resorts and Watering Places (Ireland) Act, 1909, any urban or rural authority is now authorized to expend money out of the rates for the purpose of advertising the advantages and amenities of its district, or any part thereof, as a health resort or watering place. The Board now understands that several local authorities are taking advantage of the provisions of the Act.

Dispensary Medical Officers.

It is announced that during the year thirteen boards of guardians adopted the system which was inaugurated at the suggestion of the Board a few years ago, whereby scales of graded salaries are fixed for the medical officers, providing for initial salaries with increments after definite periods of good service. The new system was intended to meet the complaints of many medical officers that their salaries were too small and were not progressive, except in a few individual cases, officers after many years' service being no better paid than when they joined as young men. Scales are now in force in seventy-seven unions, situate chiefly in the provinces of Leinster and Munster. The guardians of the unions in the congested districts are handicapped by their financial position in dealing with the claims of the medical officers, but the Board hopes that the example set by the Banbridge, Belfast, Coleraine, and other boards of guardians in Ulster, will be more generally followed in the well-circumstanced unions, and graded scales of salary adopted commensurate with the services rendered.

Prevention of Tuberculosis.

The members of the Board state that, as a consequence of the Tuberculosis Prevention (Ireland) Act of 1908, which came into force on July 1st, 1909, a number of new and important duties have devolved upon them. Reviewing what has been done in regard to the notification of tuberculosis, the report points out that the Act limits notification to cases of tuberculosis which are a danger to others, owing to the infectious nature of the discharge from the patients, and accordingly, when making the order in pursuance of Section I (2) of the Act, after consultation with the Presidents of the Royal Colleges of Physicians and Surgeons in Ireland, the Board confined notification to tuberculosis of the lung in the case of sufferers so circumstanced that they are likely to become, unless precautionary measures are taken, a means of distributing the disease from the fact of their being housed, or working, under conditions which may be dangerous to others. It is explained in the report that it was the desire of the Legislature in introducing the principle of compulsory notification of tuberculosis to safeguard the sufferers from unnecessary intervention or publicity to the greatest extent compatible with the public interest. Consequently, the penal provisions applicable to other infectious diseases under the Public Health Acts have not been extended to tuberculosis, and there is no power given to sanitary authorities for compulsorily removing patients to hospital. Moreover, it is expressly provided that no undue publicity shall be given to the particulars contained in the medical practitioner's certificate in a case of tuberculosis, and the Board therefore advised sanitary authorities to entrust reliable officers with the custody of the forms of notification, and to impress upon these officers that any disregard of the obligations of secrecy with respect to the contents of such forms would be treated as a serious breach of discipline. The Board, it would seem, does not think that the progress so far made in regard to the adoption of notification is unsatisfactory, especially if it is considered that six years elapsed before the notification of infectious diseases under the Act of 1889 was in operation in thirty-three districts. Misunderstanding, the report says, exists in regard to the power of compulsory removal of tuberculous patients to hospital, and to possible loss of employment; but with the lapse of time and the example of other districts, these apprehensions will, no doubt, be gradually allayed. The Board expresses the hope that before long steps will be taken to introduce the compulsory notification of tuberculosis in all the larger urban districts. Such a course is specially desirable in the county boroughs of Cork and Waterford, where the incidence of phthisis is particularly heavy.

Building of Sanatoriums.

Part II of the Tuberculosis Prevention Act gives powers to local authorities to provide sanatoriums for the treatment of the disease. The report, only covering the period up to the end of March, states that the appointment of officers to, and the equipment of, the Streamhill Sanatorium of the County Cork Joint Hospital Board had made satisfactory progress. The sequel to this is that the Countess of Aberdeen recently opened this Cork Sanatorium. This part of the Act has also, it is stated, been under the consideration of the County Councils of Kildare and Clare. It appears, too, that the sanatorium at Crooksling, established by the Dublin Joint Hospital Board, is in course of erection. The educational movement, under the auspices of the Women's National Health Association, presided over by the Countess of Aberdeen, continues, as the report observes, to do excellent work in many directions, and has the effect of directing attention amongst the people to the best means of preventing the spread of tuberculosis.

A Sanitary Milk Supply.

The report also says that the administration of the Dairies, Cowsheds, and Milkshops (Ireland) Order came into force in May, 1908. Strong recommendations were made to district councils, where the dairying industry is extensively carried on, to appoint veterinary surgeons as chief inspectors to superintend the work of the ordinary inspector, and in some instances the Board issued mandatory orders to local authorities directing them to appoint veterinary surgeons. The number of districts in which veterinary surgeons had, up to the date of the report, been employed for the administration of the Order was 145, while in 71 further districts other inspectors had been appointed. It will thus be seen that provision for the control of the sources of the public milk supply has been made in 216 out of a total of 308 sanitary districts. The large number of districts in which the Order is in successful operation and working smoothly proves that the apprehensions of hardship arising from its administration which were at one time prevalent have not been realized. The districts in which no action has as yet been taken are partly composed of poor and remote areas, where but little milk is produced for public sale. On the other hand, there are some districts where the dairying industry is largely carried on, but in which the local authorities are in determined opposition to the enforcement of the Order. In one or more of those cases, where methods of persuasion have proved ineffectual, the Board is having recourse to proceed-

ings in the High Court for a writ of mandamus to compel district councillors to put the Order in force. From a return recently obtained from the clerks of local authorities, it appears that 6,651 persons are now registered as carrying on the trade of cowkeeper, dairyman, or purveyor of milk. No doubt, with a more extended enforcement of the Order, this number is capable of being largely increased, but the supervision over dairy premises, even as at present exercised, cannot fail to be attended with beneficial results to public health.

CONCESSION TO IRISH MIDWIVES.

As a result of the representation of the grievance caused to the Irish trained midwives by their non-inclusion in the Midwives Act of 1902, a clause is to be inserted in the new bill entitling properly certified Irish midwives to registration and certification under the Midwives Act, 1902, when the bill becomes law.

COUNTY AND CITY OF CORK SANATORIUM FOR CONSUMPTION.

This sanatorium, situated at Streambill, co. Cork, is now a completed project and ready for the reception of patients. Her Excellency the Countess of Aberdeen travelled from Dublin by special train on August 4th to perform the opening ceremony. On arrival at the Doneraile Station Her Excellency was received by the Chairman of the Joint Hospital Board and presented with an address of welcome and appreciation for the interest she has displayed in the erection of the sanatorium by coming such a long journey to perform the ceremony of laying the foundation stone, and now again on the occasion of opening the sanatorium for the reception of patients. On arrival at the new sanatorium, which is three miles or more from Doneraile, Her Excellency made a tour of inspection, and in the course of a speech thanking the Joint Hospital Board for having given her the opportunity of seeing the building for herself, and also thanking them for the hearty welcome they gave to her, referred to the reduction in the death-rate from tuberculosis in Ireland during the past year. In 1907 there were 11,600 deaths due to tuberculosis in Ireland out of a total of 70,000 deaths. Now for 1909 Sir William Thompson, the Registrar-General, reported that the death-rate is 10,514, out of about the same general death-rate. That meant a saving of 1,096 deaths in Ireland. Look at it as they might, from the patriotic or from the economic standpoint, they would see they had benefited by this decrease in a disease that all nations at the present time were trying to fight. Cork is the first county in Ireland to erect a county sanatorium, and it is to be hoped the other counties will follow the good example set to them. Cork, though a black spot on the map for deaths from tuberculosis, has perhaps received most encouragement to go on with the campaign against tuberculosis, as there has been a very decided drop in the death statistics since 1907, when 1,134 deaths were recorded, while in 1909 there were only 1,089.

As regards the sanatorium building itself, the frontage is segment shape, the central portion being occupied by the administrative section, while on either side are the patients' quarters, those on the east being devoted to the male, and those on the west to the female, patients. The walls are of woodwork, supported by iron uprights laid on a cement foundation, and every modern device has been brought into requisition to secure the greatest possible amount of light and air in the rooms. The extreme length of the front section is 300 ft., and the depth of the cross section behind is about the same measurement. The water supply is drawn from a number of splendid springs in the mountains overlooking the sanatorium, and carried thither by gravitation. The whole institution is lit by electricity generated on the premises. Already 20 cases have been admitted, and at the meeting of the conjoint board held on August 13th, it was decided that the minimum fee for patients who could pay would be 7s. per week.

Scotland.

[FROM OUR SPECIAL CORRESPONDENTS.]

THE EDINBURGH MEDICAL SCHOOL.

DURING the past two years the efficiency of the Edinburgh Medical School has been a subject much discussed by members of the medical profession in the city. On all hands it is unofficially recognized that the present condition of affairs is in many respects unsatisfactory.

An influential committee of the Edinburgh Pathological Club, appointed specially for the purpose, has gone fully into all the aspects of the subject, and the criticisms and suggestions contained in the report have been laid before the university authorities.

Alteration of some methods in the Edinburgh system of teaching and of training is urgently called for. The mental attitude of teachers towards the need and the value of co-operation in the different branches and subjects of medicine, and towards the clinical element in teaching, has of recent years tended rather to lag behind the necessities of the time. Teaching, also, has to some extent tended to oust research work from the life of the young graduate.

There is every indication that in the near future the Medical School in Edinburgh will become even more efficient and prominent than it has been.

EDINBURGH POST-GRADUATE COURSES IN MEDICINE.

During the month of August a course on internal medicine for graduates is this year being held in Edinburgh. The limited number of places for graduates in this course have been well filled, and the course bids fair to prove such a success as will ensure its repetition next year.

THE JULY REPORT OF THE REGISTRAR-GENERAL FOR SCOTLAND.

During the month of July, 1910, there were registered in the towns of Glasgow, Edinburgh, Dundee, Aberdeen, Paisley, Leith, Greenock, and Perth, the births of 3,725 living children, of whom 1,885 were males and the rest females. These births are 330 fewer than were registered in these towns in June, and 183 fewer than were registered in July of last year. The equivalent annual birth-rate is 23·2 per thousand of the estimated aggregate population of the eight towns, a rate which is 2·9 below the birth-rate for June, and 1·5 below the rate for July of last year. It is the lowest July birth-rate recorded in these reports, the previous lowest being that for July of 1909, which was 24·7 per 1,000. The birth-rate for the month varied from 31·2 in Greenock to 17·6 in Edinburgh.

BRITISH HOSPITALS ASSOCIATION CONFERENCE.

The first conference of the British Hospitals Association will be held in Glasgow University on September 29th and 30th, and arrangements are now in progress for the gathering. The Lord Provost of Glasgow will attend the opening sederunt and offer the delegates a civic welcome to Glasgow. On the 30th the delegates will be entertained by the Corporation, a committee of the magistrates and town council having been appointed to carry out the necessary arrangements for this civic function. Dr. D. J. Mackintosh, M.V.O., Medical Superintendent of the Western Infirmary of Glasgow, is one of the honorary secretaries. The President for the year is Mr. H. Cosmo Bonsor, Treasurer of Guy's Hospital, London.

GLASGOW REFUSE DISPOSAL.

A most interesting inspection took place on August 9th, when the Cleansing Committee of Glasgow Corporation paid a visit to Ryding Estate, owned and managed by the City Cleansing Department. This estate, extending to 800 acres, was purchased nineteen years ago to provide a method of disposing of the city refuse which could not be otherwise utilized. While much refuse can be sold as manure, there is always a surplus which cannot be easily got rid of,

and this is sent at the rate of from 56,000 to 60,000 tons annually to Ryding, part being used to enrich poor ground and part to fill up hollow ground. As a result the land has yearly increased in productiveness, and crops of oats, wheat, hay, and turnips are raised. The profit on the cropping account last year was £687, and the average for the past ten years has been over £560. From two quarries on the estate a goodly revenue is also derived from the whinstone. Fodder is supplied from the estate for the horses belonging to the department in Glasgow. The first venture made by the Corporation for the disposal of city refuse was in 1879, when a bog known as Fulwood Moss was leased for thirty-one years. This useless bog has now been transformed into good arable land and must now revert to the proprietor. The Ryding Estate was purchased outright in 1891, and its undulating nature made it specially useful for the deposition of unsaleable refuse. Another estate, that of Robroyston, was purchased in 1902, extending to 656 acres, and this has not only been utilized to advantage for depositing material, but the draining and levelling has given work during time of stress to a large number of the "unemployed" of the city. These estates and the operations connected with them are so conducted as to form no charge on the rates, the balance being always on the right side. This is a most satisfactory result of this department of municipal enterprise, and a source of gratification to the city.

England and Wales.

[*FROM OUR SPECIAL CORRESPONDENTS.*]

BIRMINGHAM.

Health of Birmingham in 1909.

The report of the medical officer of health (Dr. Robertson) on the health of the city of Birmingham for the year 1909 has just been published. The estimated population on June 30th, 1909, was 563,629. The number of births was 14,985, as compared with 16,141 in 1908 and 15,619 in 1907. The birth-rate was 26.7 per 1,000, and is by far the lowest recorded. The fall in birth-rate is shown in the following five-yearly periods: 1871–5 the mean birth-rate was 40.4; 1881–5, 36 1; 1891–5, 32.7; and 1901–5, 31.3. The total number of deaths was 8,691, which gives a death-rate of 15.5 per 1,000, as compared with 15 9 in the previous year. This also is a great reduction as shown by comparing the same five-yearly periods. From 1871–5 the mean death-rate was 25.2; 1881–5, 20.7; 1891–5, 20.3; and 1901–5, 18.1.

Infant Mortality.

The number of infants who died before they reached the age of 1 year was 2,030, as against 2,339 in 1908, 2,300 in 1907, 2,686 in 1906, and 2,451 in 1905. The infant mortality-rate was 135, and is the lowest yet recorded. The following table gives the details of the infant mortality during the past five years.

Cause of Death.	1905.	1906.	1907.	1908.	1909.
Measles	40	46	81	13	108
Whooping-cough	72	105	63	121	54
Diarrhoea	364	667	188	364	183
Enteritis	126	151	116	128	99
Tuberculous diseases	75	54	70	58	40
Premature birth	304	321	318	328	318
Debility and marasmus	536	453	458	457	391
Convulsions	128	98	120	104	79
Bronchitis, pneumonia, and pleurisy	380	356	441	335	314
Suffocation	75	85	78	87	61
All other causes	351	350	367	334	383
Total	2,451	2,686	2,300	2,339	2,030

An Epidemic of Measles.

There was an epidemic of measles during 1909 which caused the largest mortality yet recorded except that of 1871. The epidemic period lasted twenty weeks, during which time there were 476 deaths. The following table shows the extraordinary rapidity with which a measles epidemic will develop and afterwards subside:

Four weeks ending:	Total deaths from measles.	
August 29th, 1908	0	Before the epidemic: 31 deaths in twenty weeks.
September 26th, 1908	2	
October 24th, 1908	1	
November 21st, 1908	10	
December 19th, 1908	18	
January 16th, 1909	41	Epidemic period: 476 deaths in twenty weeks.
February 13th, 1909	76	
March 13th, 1909	161	
April 10th, 1909	136	
May 8th, 1909	62	
June 5th, 1909	21	After the epidemic: 67 deaths in twenty weeks.
July 3rd, 1909	24	
July 31st, 1909	14	
August 28th, 1909	6	
September 25th, 1909	2	

All the houses in which measles was known to exist were visited by the health visitors, who left printed leaflets regarding the precautions necessary to prevent the spread of the disease, and who ascertained which of the children in the house should be kept away from school. Over 6,000 houses were visited during the epidemic period. Before 1909 it was the custom, when a case of measles occurred in a house, to keep all the other children, as well as the patient, away from the school. This practice led to an unnecessarily large loss of attendance, and accordingly it was decided to exclude from school attendance only those contacts who had not previously had an attack of measles, while those who had already suffered from the disease were allowed to continue to attend school. This plan was found to work most satisfactorily.

Vaccination.

The vaccination officers' report for 1909 was as follows: Births returned, 15,401; conscientious objections, 454; died unvaccinated, 1,519; successfully vaccinated, 11,266; postponed by medical advice, 99; removed to other districts, 202; lost sight of, 1,480; still under notice, 231. During the year many instances of worthless vaccination by medical men were seen—cases in which vesiculation is little larger than a pin-head in one or two places. Such vaccination is worthless as a protection against small-pox, and the fault lies largely with the general public, who crowd to the doctor who will stoop to do what is obviously a fraud on the public at large—inefficient vaccination.

Scarlet Fever.

There were 2,871 new cases of scarlet fever notified during 1909, as compared with 2,275 in 1908, and 2,522 in 1907. The total notifications of scarlet fever received numbered 2,941, the difference being due to errors of diagnosis and the notification of some cases which were not resident in Birmingham. The number of deaths was 106, making a fatality-rate of 3.7 per cent., as compared with 3.4 per cent. in 1908. In the large majority of the cases no history of personal contact with previous sufferers or carriers was obtained on investigation. During the year there were 148 cases notified as occurring after the return from isolation of a previous case of scarlet fever from the same house. Of these possible "return" cases, 34 have to be excluded, for the following reasons: 25 secondary cases occurred more than 28 days after the discharge of the primary cases, 4 cases occurred where the infecting cases were not one of scarlet fever, and 5 where the return cases were not scarlet fever. This leaves 114 as the corrected number of "return" cases, following upon 101 possible infecting cases who were freed from isolation during 1909, or the latter part of 1908. Of the "return" cases 69 occurred after an interval of from 9 to 28 days. All parents were advised to take certain precautions when the children returned home from the isolation hospitals, and there is no doubt that in many houses reasonable care was exerted by the parents.

Diphtheria.

The number of cases of diphtheria notified during 1909 was 687, and the number of deaths was 89, or 13 per cent. There was less diphtheria than in the previous year, and still less than in 1907, when 1,012 cases were notified. No special factor appeared during the year to have had any marked influence in disseminating the disease. The milk supply of each infected house was carefully recorded and studied, and no evidence of any carriage of infection by milk was shown. There were 49 secondary cases of diphtheria occurring in houses in which the primary case had occurred in 1909. Of these only one arose within 28 days after the return of the primary case from hospital. During the year 706 Hewat swabs were examined for diphtheria bacilli by the University of Birmingham for medical practitioners in the city at the expense of the Corporation, in addition to 146 swabs examined in connexion with a small outbreak of diphtheria in one of the hospitals, where cultures were taken of all the patients and staff.

Typhoid Fever.

The number of cases of typhoid fever notified during the year 1909 was 95, and the number of deaths was 22, giving a case-mortality of 23 per cent. The number of cases was only half the number in 1906 and 1908 respectively, which were previously the two years with the smallest typhoid incidence. The prevailing severe type of the disease remained at about the same high level as in 1908, nearly a quarter of the total number of cases terminating fatally. Assuming that typhoid fever is due directly or indirectly to excremental contamination, it is extremely probable that the recent subsidence of the disease has been caused by improved provision for avoiding filth conditions in the neighbourhood of dwellings, especially in the poorer parts of the city. In several cases a history of the recent consumption of shellfish was obtained as follows: 14 cases after eating mussels, 1 after oysters, 1 after whelks, and 2 after periwinkles.

Tuberculosis.

During the past four years the mortality from tuberculosis has been relatively low, the rate of mortality from all forms being 1.63 per 1,000 in 1909, against 1.67, 1.67, and 1.62 respectively in the three previous years. There were 914 deaths from tuberculosis, and of these 751 were from phthisis, 48 from abdominal tuberculosis, 51 from tuberculous meningitis, and 64 from other forms of tuberculosis. Tuberculosis in its various forms was responsible for 10 per cent. of the total mortality in Birmingham in 1909, while in the previous year it was responsible for 11 per cent. The reduction in mortality was largely due to a reduction in cases of abdominal tuberculosis and tuberculous meningitis—forms of the disease which affect children. This satisfactory result is most probably due to the better supervision of the milk supply which has been going on during recent years. Of the 751 deaths from phthisis during the year, 521 had been notified as cases—equal to about 70 per cent. During the years 1907, 1908, 1909, 531 samples of milk supplied to dealers and others in the city were bacteriologically examined for tubercle bacilli at the university on behalf of the Health Committee. Out of 206 samples taken from churns in the city, 24, or 12 per cent., were tuberculous; of 44 samples taken from cowsheds in the city, 5, or 11 per per cent., were tuberculous; and of 181 samples taken from cows outside the city, 12, or 7 per cent., were tuberculous. There were, therefore, 41 samples out of 531, or 8 per cent., which were found to contain living tubercle bacilli.

MANCHESTER.

MIDWIVES SUPERVISING COMMITTEE.

THE Midwives Supervising Committee of the Manchester City Council has just issued its annual report of operations under the Midwives Act for 1909. The number of midwives practising in Manchester was 158, of whom over 68 per cent. were certificated. Dr. Margaret Merry Smith paid 341 visits of inspection to examine the midwives' homes, bags of appliances and record books, and investigated their mode of practice at the patients' homes, 440 lying-in women being thus visited. Handy women and monthly nurses who had been attending cases of puerperal fever were also visited. Four midwives were suspended, and three had their names taken from the roll for failure to comply with the regulations. One other was fined 20s. and costs for practising without notifying the authority. On the whole, however, the work done by the midwives has been good; they have loyally co-operated in carrying out rules, and in only few cases have their appliances and registers been badly kept. The total births registered were 18,016, of which the midwives attended 10,614, that is, 58.8 per cent. In the previous year the midwives attended 11,498 out of 19,041, the birth-rate having declined from 28.89 to 27.52. The percentage of cases attended by midwives is in strange contrast to Salford, where the midwives are said to attend 72.4 per cent. of the births.

During the year 84 cases of puerperal fever were notified, of which 17 died. The attack-rate per 1,000 births was thus 4.67 and the case fatality 20.2 per cent. In the previous year there were 101 cases, with 24 deaths, an attack-rate of 5.3 per 1,000 and a case fatality of 23.8 per cent., which shows a considerable improvement during the year; 33 cases were in the practice of midwives, 34 in the practice of doctors, and 15 were cases where both doctor and midwife had been in attendance, while 2 cases were unattended; 9 of the cases were after abortion, 55 after normal full-time labour, and 20 after abnormal full-time labour, 12 of these being after use of forceps. Perineal tear was noted in 14 cases. Careful inquiry was made in the case of every midwife, and it was evident that midwives suffering from septic fingers hardly realized the danger of attending women at such a time. In one of the rapidly-fatal cases the source of infection was a superficial whitlow on the midwife's finger. The danger of relying on the mere form of disinfection instead of carrying it out in a thorough manner was well shown in a series of cases which occurred in the practice of a young midwife who had obtained the certificate of the Central Midwives Board after training in hospital.

During the year medical aid was summoned by midwives in 1,961 cases, as compared with 1,634 in the previous year. Of the total, 57 were for abortions or complications of pregnancy, 212 for illness during lying-in, 511 for attendance on the newly-born infant, and 1,181 for difficulties in labour. By far the commonest reasons for summoning the doctor were tedious labour in 381 cases, perineal tear in 251, haemorrhage in 125, and feebleness or prematurity of the infant in 264. Although medical men were summoned in 1,961 cases, only 342 applications were sent in for payment of fees. These were considered by the Medical Subcommittee, and payment was made in 282 cases, amounting to £287 6s. Of the 60 cases rejected, 40 had an income above the scale, and 15 did not fulfil the necessary conditions under which a fee is paid. One duplicate application was received and four were referred to boards of guardians. This last is significant in view of the Midwives Bill that has recently passed its second reading in the House of Lords. At present the Supervising Committee is voluntarily paying the fees under Section 133 of the Public Health Act of 1875, and the arrangement has worked well and at little cost, medical men being reasonably sure of being paid for their services where patients are unable to pay. The City Council has already protested against the provision of the new bill which puts on guardians the duty of paying medical fees in these cases, and if the bill becomes law in its present form there will be danger of serious overlapping between the local Supervising Committee which controls the midwives and the guardians who will be responsible for the medical fees. The Supervising Committee, which partly consists of specialists in the work, is the only authority which is competent to decide the nature of the cases for which medical aid is summoned, and yet the guardians will have to pay for that aid. Under the bill the Local Government Board may make

regulations to prescribe the manner in which the guardians are to carry out their duties, but unless these regulations are strict and rigid, there will be a large field for mutual friction between the two authorities. The guardians will have to send to the Supervising Committee a list of all cases where a fee has been demanded, and thus the work will be divided up between two bodies where one could do it far better. As the payment of fees is not to be regarded as parochial relief, it is difficult to see why the guardians should be brought in at all unless it is only intended to pay for paupers. If that is the intention, there cannot be that "secure expectation of payment" which the Departmental Committee recommended and without which the Act will be a failure. It is perfectly clear that unless the regulations of the Local Government Board are carefully watched, the battle over the Midwives Act may have to be fought over again, and there may be a serious disturbance and interference with the good work of the Manchester Supervising Committee.

The following is the Local Supervising Committee's revised statement of payment of fees to medical practitioners when summoned to the assistance of midwives:

Subject to the conditions contained in the book of application forms, the following fees will be paid:

In the case of a woman in labour, a fee of 21s. will be paid for emergencies numbered 1 to 6, and in addition for secondary *post-partum* haemorrhage.

1. A malpresentation.
2. Presentation other than the uncomplicated head or breech.
3. Where no presentation can be made out.
4. Where there is excessive bleeding.
5. Where two hours after the birth of the child the placenta and membranes have not been completely expelled.
6. In cases of rupture of the perineum or of other injuries of the soft parts.
7. Secondary *post-partum* haemorrhage.

A fee of 5s. will be paid for the following emergencies during the lying-in period. If the case is diagnosed puerperal fever, a total fee of 21s. will be paid.

1. Abdominal swelling and tenderness.
2. Offensive lochia, if persistent.
3. Rigor, with raised temperature.
4. Rise of temperature above 100.4° F., with quickening of the pulse for more than 24 hours.

A fee of 5s. will be paid for attendance on cases of

1. Purulent discharge during pregnancy or at the time of labour.

A fee of 2s. 6d. will be paid for medical aid rendered to the newborn child between the hours of 9 a.m. and 9 p.m , and 5s. for such aid between 9 p.m. and 9 a.m., for :

1. Injuries received during birth.
2. Malformation or deformity.
3. Dangerous feebleness.
4. Prematurity.
5. Convulsions.

These payments will only be made in all the foregoing circumstances where the income of the family does not exceed the following:

Man and wife	21s. a week.
Parent or parents and 1 child	23s. ,,
Parent or parents and 2 children	25s. ,,
Parent or parents and 3 ,,	27s. ,,
Parent or parents and 4 ,,	29s. ,,
Parent or parents and 5 ,,	30s. 6d. ,,
Parent or parents and 6 ,,	32s. ,,
Parent or parents and 7 ,,	33s. ,,

It will be noticed that, in the above list of emergencies for which a fee is paid to medical men, nothing is said of inflammation of the eyes of the infants, though when it occurs the midwives have strict instructions to advise medical aid. Since the beginning of the present year ophthalmia neonatorum has been compulsorily notifiable in Manchester, and investigations by Dr. Merry Smith have shown that "midwives must be warned against over-interference with the eyes and instructed to cleanse only the external surface of the lids either during birth or later, and to use for this purpose boracic lotion only. Should inflammation of the eyes occur, the child should at once be placed under medical care and the midwife should not attend to the eyes at all."

The Midwives Act has now been actively administered in Manchester for over five years. In that time there has been a distinct improvement in the work of the midwives, and, thanks to the energetic educational measures undertaken by the local Supervising Committee, the lying-in women, even in the poorest districts, are realizing the great importance of cleaner personal habits, and are readier to carry out instructions as to infant care. The very poor in the central districts are now sure of skilled care and attendance from the midwives working directly in connexion with St. Mary's Hospitals, and the poor women throughout the city can obtain medical aid when required at the cost of the Corporation. The good results of the work of the Supervising Committee are self-evident, and the effect on the general population is both gratifying and stimulating.

HOPE HOSPITAL.

The position of Medical Superintendent of Hope Hospital, which became vacant owing to the retirement of Dr. Hindshaw from ill health, has been filled by the appointment of Dr. Herbert Yearnshaw, who has been in private practice in Salford for the last fourteen years. There were over forty applicants for the post, and the guardians chose four of these to appear before the Board—namely, Dr. W. A. B. Young, South Cave, East Yorkshire; Dr. J. P. Haslam, Newcastle-on-Tyne; Dr. C. W. Hutt, Warrington; and Dr. Yearnshaw, Salford. Of the thirteen guardians present, ten voted for Dr. Yearnshaw, who was thereupon declared elected. Dr. Yearnshaw is a member of the Salford Division of the British Medical Association.

Correspondence.

THE FUTURE OF THE ASSOCIATION.

SIR,—I am sorry my friend, Dr. Wynne, thinks my letter hurtful or disheartening. May I try to reassure him?

In the first place, it is surely most encouraging that he and I, thinking differently on this question, can now discuss it without bitterness. There is a very profound saying that "in order to forgive everything one only needs to understand everything," and it seems to me that the very circumstance that each side in this debate is now willing to admit that the other means well, indicates, surely, a fuller grasp by both of matters which concern so deeply the future of the Association.

Again, Dr. Wynne has written some very kind things about me. I feel precisely the same about him. When men feel personal confidence in each other, surely common ground will not be long in making itself apparent.

But I am quite sure it would be a real disservice to the Association to let it appear from silence that differences were dead when in reality they are only dormant. Men are only waiting, and it would be in the highest degree unsatisfactory if this attitude were misunderstood at the present juncture. I wish to convey no suggestion whatever of any hostile attitude—far from it—but undoubtedly of an anxious attitude. Nor are those who are interested in the matter a very few. No Branch had any right to poll its neighbours, and such Branches as took a postal vote of their members some time ago did so on their own initiative. Thus the comparatively small proportion of the Association who voted in no sense indicated the number of our supporters. What did indicate this number was the overwhelming proportion of the votes recorded in our favour. And I am confident that the outside medical public also are not indifferent. How else explain entirely the pause in our rapidity of growth? I do not wish to dwell on that subject, but to try to explain it. If men are to join our ranks in the numbers Dr. Wynne and I would like to see they must feel sure of two things—first, that the government of the Association shall be on prudent lines, and, secondly, that they shall have their fair share in controlling its policy.

Dr. Wynne will forgive me, I hope, if I point out to him that, as Representative of two of the most compact Divisions in the country, he can scarcely judge of the extent of the disfranchisement which the wider areas of other Divisions would have suffered under the proposed rules to which we objected. Nor does the House of Commons furnish any analogy. On the contrary, it

provides a valuable contrast. Parliamentary elections disfranchise very few men who can be supposed capable of voting intelligently, and the polls are fixed by law within easy reach of all, are open all day, and the process of voting only occupies a few minutes. Compare with this the method proposed for us—namely, attendance at a distant meeting at a certain hour with considerable expenditure of time at it. It should also be remembered that medical men have special disabilities and in framing a rule for themselves should surely allow for these.

If Dr. Wynne will think over our proposals again he will, I think, find little harm in them and a vast amount of reason. Let me put a few questions.

1. Will any prudent or thoughtful man consider it undesirable that a single chamber government, however able, which only meets for three consecutive days in the year to discuss what may be the most crowded and at the same time the most momentous business, should have an effective possible appeal from its decisions? Let it be quite clear I neither impugn the capacity or good intention of the Representative Body, nor do I desire to hamper it. When one puts a brake on a bicycle one does not do so to prevent it going fast and far.

2. Assuming it is only commonly prudent to have such a possible appeal, can anything simpler or less hampering than the referendum be devised? So far from desiring a separate revising second chamber with its inevitable delays and friction, I would willingly see the whole Council elected by the Representative Body if we had such a Referendum as we are proposing.

3. And granted a referendum, what better form, or what form more carefully guarded from the possibility of frivolous abuse, can be designed than that we have suggested? It has to be obviously open to every one to record their vote—that is, postal—and it must be reasonably easily obtainable and have its continuance secured. By giving it to a simple majority of the Council, which will be more and more elected by the Representative Meeting, we only give the Executive a necessary power of revision, which it would only use in rare cases. By giving it with equal rights to any five or more Branches or Divisions of collective membership not less than 10 per cent. of the Association, we make individual wirepulling or frequent appeals to it practically impossible.

I feel confident that our differences have arisen from mutual misunderstanding. With better opinion of each other, with a great common end in view, the advancement of the profession, and with real dangers looming ahead, which we shall all, as comrades shoulder to shoulder, have to meet and overcome, it seems to me we are approaching a satisfactory settlement of this most important matter. Let us make our watchwords openly, what every one of us privately wishes them to be, "*prudence and fairplay*"—words which are the very soul and substance of what we are contending for—and with consequently established confidence in our policy, our Association should steadily go on, as it so greatly needs to do, to include, not half, but the whole of the British medical profession.—I am, etc.,

Exeter, Aug. 15th. W. GORDON.

SIR,—I was not surprised to find that the letters from Dr. Gordon and myself, which you published in the JOURNAL of the 6th inst., had been treated in a facetious manner by Dr. Wynne. The same attitude was assumed by Dr. Verrall in his criticism of Mr. Pye-Smith's letter of the previous week, and in his speech in reply to mine at the Extraordinary General Meeting on June 29th in London. A sort of genial sarcasm, implying pity for delusions of mental obtuseness on our part, underlies their words. Secure in the possession of a huge majority in the Representative Body, these gentlemen can afford to be indulgently humorous at our expense. But what if it proved that they, and not we, are living in a fool's paradise, and that the large body of members who have not yet expressed their views are found to agree with us and not with them? It must not be forgotten that nearly nine-tenths of the members have not expressed an opinion by vote. It is true that they had an opportunity of doing so, but it is not judicious, to say the least, to conclude that silence means consent. To make changes amounting to a reversal in some respects of the policy of the Association is, therefore, unwise without a further test of the mind of the Association. We do not affirm that the members would repudiate the action of the Representative Body in such circumstances, but we believe that, if restrictions of personal liberty within the Association and war with bodies outside begin to gall and chafe and to call for sacrifices, very many would take up the cry, "We are being misled," and adopt their only revenge by resigning their membership. We have no sympathy with those who absent themselves without reason, and we agree with Father O'Flynn that such lazy ones should be helped on with the stick; but there are many who, from legitimate and defensible reasons, find attendance at the meetings difficult, if not impossible, and who cannot be accused of treachery if they complain of the decisions arrived at, or resign as a protest. If the whole of the members are given the opportunity of voting by postal vote, and the case fairly presented to them, the decision, whatever it is, would be loyally accepted by us. What we assert is that the majority of the members do not know well enough what is being done, and what may result from the present policy of the Association. Probably 50 per cent. of them have never read the Draft Charter, and fewer still the present Memorandum, Articles, and By-laws of the Association. The SUPPLEMENT is a closed book to them, and, however inexcusable it is, a state of gross darkness exists among many members as to the new proposals.

When they come to realize the tyranny or inconvenience of the regulations proposed, and the hostility of the public which is inevitable from the adoption of some of the proposals, they will be disagreeably surprised and probably indignant. It will not do to dragoon outsiders into the Association and then threaten them with expulsion if they will not toe the line. This is a free country, and, educated or uneducated, its citizens will not submit to force. The close corporation which knows how to deal with those who will not join (as Dr. Mark Taylor in his letter of July 30th frankly proposed as the proper form of the Association) will not do; nor is it right, as an influential member three years ago mentioned to me as his ideal, "to make the Association so powerful that it will be dangerous to remain outside and still more dangerous to be expelled." We must make the Association, on the contrary, so useful and so reputable, that it will be a privilege and an honour to become a member. This is a very different thing. One means war and the other peace. Mr. Butlin, in his educative and admirable presidential address, said: "Since its reconstitution eight years ago it [the Association] has devoted its attention very largely to the defence of its members, and of the profession generally, against the attempts which are made, with cruel frequency, against them by many sections of the community. . . . But I am afraid there is no side of our work which needs greater tact or more delicate handling than this." An expression of undue force on the one hand, an exhibition of weakness on the other hand, and the amount of mischief which may follow is incalculable. I cannot remember any period of our history when our affairs required more skill or sagacity than the present. At the annual dinner, Dr. J. A. Macdonald defined the objects of the Association as "principally for the furtherance of science and the relief of needy humanity." The Earl of Aberdeen, on the same occasion, expressed his admiration for "the spirit and principle which inspired the methods of the Association." If Dr. Taylor's truculent policy is adopted, no man need expect such words from the noble earl or any other public man in future.

I was delighted to see that the Representative Meeting in July rescinded the amendments of the Wandsworth Division, which had been passed by large majorities at the June meeting. We are glad to welcome the evidence of a conciliatory spirit in Dr. Goodall's motion to refer the question of a postal vote to the Divisions.—I am, etc.,

Edinburgh, Aug. 15th. A. WALKER.

THE FUTURE PROSPECTS AND POSITION OF THE MEDICAL PROFESSION.

SIR,—My attention has been drawn to a slight error which appears in my article on the "Future Prospects and Position of the Medical Profession," etc., published in the JOURNAL of July 16th. On p. 138, second column, I make use of the following words:

As a further illustration of the way in which certain people endeavour to do away with payment to doctor for services

rendered, I may allude to the memorandum recently issued by the National Committee for the Prevention of Destitution, of which the Dean of Norwich is President, and Mrs. Sidney Webb, one of the Vice-Presidents, objecting to Clause 17 of the Midwives Bill, on the ground that payment of a fee to a doctor, who may be called in by a midwife to assist her in an emergency, would pauperize the patient. The Committee would prefer, as usual, to exploit the doctor rather than run any risk of placing the patient under the supervision of the *Local Supervising Authorities*.

On again looking over the memorandum, I find and freely admit that instead of using the words "the local supervising authorities," I should have used the words "the board of guardians." The National Committee are apparently willing that the doctor should get a fee in such cases, but it must be paid by the local supervising authorities, so that the stigma of pauperism, disfranchisement, and the hated visits of the Poor Law relieving officers may be obviated. To my mind this is six of the one and half a dozen of the other, for whoever pays the fee, whether it be the board of guardians or the local supervising authorities, it is charity, and it must be remembered that under the Minority Scheme "the State —that is, the local supervising authority—is to have power to recover charges from patients who are able to pay." This will necessitate visits from the officers of the local supervising authority, which will be hated just as much as those of the Poor Law relieving officer. However, the original bill has been withdrawn, and Lord Beauchamp's bill has been brought in, which provides that the fee is still to be paid by the board of guardians, but that no legal disabilities will be incurred by those for whom the fee is paid. This concession should surely satisfy the National Committee, but the opposite is the case, as they still intend to urge that the fee should be paid by the local supervising authority. How is it possible for Parliament to legislate in this direction, when there is no such authority in existence? It is assuming that the Minority scheme will be adopted in the near future.

The whole aim of the supporters of the Minority Report is apparently to make it easy for the public to obtain a free medical service, in other words, a free State service, and the question of the doctor's fee is a very secondary consideration. As I have already stated, this will be good neither for the community nor the profession.—I am, etc.,

Edinburgh, August 12th. MICHAEL DEWAR.

SICKNESS AND INVALIDITY INSURANCE.

SIR,—In the discussion on sickness and invalidity insurance in your columns I have missed one point, and that an important one to most of us. It is this: If a State medical service is instituted the State medical officer will take over a certain proportion of the work done by each of us general practitioners, a proportion which will vary with the proportion which the wage-earning classes bear to the whole of each of our practices. This will mean a drop in the capital and saleable values of our practices—a serious matter to the many men whose whole capital is invested in their practices. As other schemes equally, or more, to the advantage of the wage-earning classes have been put forward, and as any idea of compensation to practitioners would not be entertained by the Government, it seems to me that the institution of a State medical service should be keenly opposed by the profession—I am, etc.

BRUCE C. KELLY, M.B., M.R.C.S.

Burnham, Somerset, Aug. 9th.

SIR,—Next session the German medical contract scheme of Messrs. Burns, George, Churchill, Rigg, and others, will be brought up. To those of us who can only practise medicine as between man and man, accepting individual responsibility and looking for individual reward for our time and pains expended, no greater injury can be done than the launching of such a wholesale trading scheme of practice.

All medical men with any sense left of honour, dignity, or truth know that personally they cannot give further the time, patience, or the necessary remedies for the terms usually offered by the "friendly societies."

Most of us know that this class of work is generally farmed by the few money-grubbing "business" rather than the true professional man, and that the bulk of the work is done by a kaleidoscopic succession of ill-paid, overworked assistants of sorts. If the extension of cheap medical attention was to be limited to the general labourer without a working family, then one could sympathize with it, but we find the scheme includes all the well paid trades with their large working families; for example, miners, weavers, builders, engineers, fitters, tool-makers, yacht and ship builders, coach-builders, sawyers, etc., warehousemen, and clerks.

The benefits would also be extended to all that vast army of parasites that exist on the weekly collections of the working classes, as the officials of trade unions, friendly societies, tontine societies, building societies, co-operative societies, and political officials and their M.P.'s, which they can afford. We are told by all that trade is prosperous, the railway year is splendid, pleasure resorts crowded, extravagance in dress phenomenal. In spite of all this we are asked by Messrs. Webb, Churchill, Rigg, etc., to attend all the well paid workers at all hours and all seasons, no matter from what cause, whether vice, gluttony, or Heaven knows not what, for next to nothing. There can only be one answer to such demands. These classes are not short of money. The most superficial observer can see that from day to day. The yearbooks confirm it, and when one goes to their accumulated reserves, what these people want is not charity or money, but a little character for straight dealing, and the whole army of insurance parasites, who are dealing in futures and thriving on it, be sent to the right about. Forty thousand medical taxpayers and their friends can influence enough voters to learn the lip-service pseudo-philanthropists of the Commons that those who have to do the real work of their schemes will decide both the terms and the mode of rendering it, and any honour for charity will go to the medical men directly earning it at the expense of their time, health, and purse.—I am, etc.,

Burnley, Aug. 14th. J. I. HALSTEAD.

SICKNESS EXPERIENCE IN FRIENDLY SOCIETIES.

SIR,—In your leader for August 13th, dealing with sickness experience in friendly societies, surprise is expressed that the average sickness period for the National Deposit Friendly Society is only 3.19 days per member per annum, whilst the corresponding figure for the Manchester Unity of Oddfellows, the Ancient Order of Foresters, and the Hearts of Oak is from sixteen to eighteen. Of the three last-named societies, I will deal only with the Hearts of Oak, and consider it in comparison with the National Deposit Friendly Society. Possibly one of the most important points is the class from which the two societies is chiefly recruited. The National Deposit Friendly Society, I believe, is supported mainly by clerks, shop assistants, servants, etc., whose claims upon the society are mainly on account of sickness, and only rarely of accident; in fact the society is mainly a sick society. In the case of the Hearts of Oak, whilst doubtless the majority of claims are for sickness, many are for accident, as the members are chiefly drawn from the artisan class, and therefore much more exposed to accident.

Apart from any such partial explanation of the disparity between the average figures of the two societies, it is undoubtedly necessary to consider other factors, of which the chief one is duly emphasized in your article—namely, that in the case of the National Deposit Friendly Society part of the cost of medical attendance and also part of the sick pay are taken from the members' private deposits—a plan not in force in the other societies. Such an arrangement, so long as human nature remains as at present, will inevitably operate in checking thoughtless and unreasonable demands upon the society's funds.

A further important point is that under the Workmen's Compensation Act in its present form all workmen disabled by or supposed to be disabled by accident are entitled to half their average wages as from the date of the accident, if the disablement lasts more than fourteen days. This being so, there is a great temptation for men to absent themselves from work for a minimum period of a fortnight, even when suffering from such trivial injury as was ignored formerly, when they either were not compensated at all (as in the days prior to the passing of the Act) or not until the end of the first fortnight (as provided by the Act in its original form). And the result of this is easily seen. Not only does the workman claim his compensation—either from his employer or from the insurance

company who represents him—but he also during his absence from work claims benefit from his friendly society's funds. Since none of these cases, apart apparently from fractures and operations, are dealt with by the National Deposit Friendly Society, it is not difficult to see why the average yearly figure for the members' disablement is so low as compared with the other societies. Reports of proceedings at recent meetings of the Hearts of Oak Society show clearly that the increased drain upon the funds in recent times is giving the committee of management grave anxiety as to the future of the society, although its accumulated funds amount to over £3,000,000, and they have actually had under consideration the question of limiting the benefits of the society to cases of sickness, to the exclusion of all cases of disability from accident. The fact is that where a man by a fixed payment becomes entitled to an indefinite amount of treatment he is very generally inclined to obtain as much as he can for the money, and seems to think that by doing so he is doing "good business." Nor can this be wondered at. The fault is mainly with those persons who have bestowed upon him such unrestricted power. Many club patients call at the doctor's surgery on Sunday morning because it gives them an object for their walk, just as men not infrequently pay a most unreasonably early visit to the hospital because, as they say, "Well, there isn't much the matter, but as I was passing I thought I might as well call in for a bottle!"

Where a quite nominal sum is paid for many and indefinite benefits, it is not likely that those benefits will be valued at their true worth; and the National Deposit Friendly Society is very wise in making a contributory scheme compulsory for its members. It should likewise be remembered that no class of members is more likely to abuse the society than those persons whose material position renders them the least fitted for inclusion in its membership. From time to time I have definitely refused to continue attendance upon persons as club members, whose position in my judgement rendered them ineligible; and when attending them afterwards as private patients, I have found them not only able, but willing to pay reasonable charges, the only difference being that whereas as club members they used my establishment as a sort of gratuitous chemist shop, since they could get all they wanted practically for nothing, as soon as they became private patients, they thought more than twice before applying for my advice or remedies. As a matter of fact nearly all non-contributory schemes are inherently unsound and mischievous—being damaging and expensive to the persons or societies who find the funds or services, and demoralizing to the recipients, whose self-respect (a most valuable asset) is inevitably lessened or destroyed.

Only one other point calls for comment at the moment. You say in your leader that in the "Hearts of Oak Benefit Society no medical attendance at all is provided, and the members have to pay the whole of any doctors' fees out of their own pockets, and yet the sickness-rate is about sixteen days per year."

But is this so? The real fact is that the members take one of two courses: either they join some local sick society to which a doctor is attached, or in many cases the Hearts of Oak members in a given town arrange for a payment of 7s. 6d. per annum each to one of several of the doctors practising there, and so ensure for themselves all necessary medical attendance during illness. This they can well afford to do, seeing that during the whole period of disablement through sickness they receive from the Hearts of Oak 18s. per week, while, in addition, if the disablement is due to accident, they receive by law compensation equal to half the amount of their average weekly wages. Moreover as the existence of the Workmen's Compensation Act, in its present form causes men to cease work on account of quite trivial accidents—a cessation which must last for fourteen days in order to entitle them to compensation—no wonder that the Hearts of Oak shows a high figure as the average yearly disablement of its members.

The bearing of this question upon that of sickness and invalidity insurance is obvious—namely, that in any scheme which may be provided by legislation, if medical attendance is to be included, it is highly desirable to make the scheme contributory in character.—I am, etc.,

Wednesbury, Aug. 15th. WALTER GARMAN.

THE POOR LAW COMMISSION.

SIR,—In the debate opened by Mrs. Sidney Webb at the Section of State Medicine on the relation of Poor Law reform to public health administration, I had hoped to criticise some of her statements. Owing to my duties at the Section of Medical Sociology, I was unable to attend the former Section till late, and then through an oversight Mrs. Webb was called upon to reply before I had an opportunity of speaking. Might I under these circumstances ask you to permit me in the pages of the JOURNAL to put before your readers briefly the criticism I had proposed to make on that occasion?

Dealing with defects revealed by the Commission, Mrs. Sidney Webb's first proposition was:

1. The failure to provide treatment at all for many cases, and to reach others at the incipient stage.

I do not deny the truth of this altogether, but what I do contend is that this statement applies to all medical practice at the present time, and not more to Poor Law medical treatment than to the medical treatment of all the lower and middle classes of society, and that where it is true it cannot properly be used as an argument against our present Poor Law medical service. That it is proved by the report of the late Royal Commission I cannot admit. Taking the Majority Report, p. 364 (184), we read:

> We have received much evidence to the effect that the health of the community suffers because of inadequacy in the amount and quality of medical assistance.

On p. 364 (185) we read:

> On the other hand, we must not fail to observe that a large number of witnesses have stated that the health of the community does not suffer on this account.

From the Majority Report, then, we have no evidence to prove this special defect in our present Poor Law medical service.

Let us now look at the Minority Report. On p. 183 we read:

> In the face of this conflict of testimony showing evident divergence of opinion we thought it necessary not only to appoint a special investigator, but also to consult those who were officially responsible for the public health.

It is therefore not an altogether unwarranted assumption to make that if a "special investigator" and "fifty-one medical officers of health" had not been consulted, the evidence before the Minority Commissioners would have been much the same as that before the Majority. The Minority appear to think this additional evidence proves their case. My contention is that it does nothing of the kind. As a Poor Law medical officer, I naturally ask why fifty-one Poor Law medical officers, as being officially responsible for the health of the State poor, were not also consulted in the same manner. Without making any reflection on the evidence of the fifty-one medical officers of health—query, Were they whole or part time officers?—I think it only fair to quote some of the evidence derived from this source. On p. 185 of the Minority Report we read of 6 cases of scarlet fever in the house of a widow with no income. There was plenty of room in the house for isolation, and they could have been nursed at home if the guardians would have assisted; but this was refused, and the cases were removed to the isolation hospital. Nine days later 2 more children had to be removed. The total cost to the district was £55, when it might have been £5. Then the witness adds:

> This is an instance of the sacrifice of life, and health and money resulting from untreated cases of disease.

With all due respect to this witness, I would ask seriously whether this evidence proves anything. I trust what the Minority relied on was something better than this.

Again (ibid.):

> The Poor Law doctor seldom knows phthisis in any but its incurable stage. Much the same may be said of cancer.

This also, so far as there is any truth in it, affects a much larger section of the community than the legal poor.

2. The deterrent effect of the relieving officer, and of the whole Poor Law system.

With regard to this, (74) and (75) on p. 326 should be compared. The former paragraph states that:

> In the opinion of a number of witnesses Poor Law medical relief is largely deterrent on account of its association with the Poor Law.

The latter:

That there is a great deal of evidence to show that outdoor medical relief is decreasing in its deterrence. [That] the Poor Law has lost all its terrors.

In the face of such a conflict of evidence it is absurd to say that (2) is proven.

3. The adverse influence on treatment of the unsatisfactory system of remuneration of the district medical officer, and of its inadequacy.

4. The saddling of the district medical officer with the cost of drugs.

5. The failure to provide for nursing, suitable nourishment, and convalescence.

These three propositions may be frankly admitted, but such abuses could easily be reformed without the drastic changes proposed by Mrs. Webb.

6. The lack of connexion between the domiciliary and the institutional treatment.

This is not true so far as the metropolitan area is concerned. There is a very close and improving connexion between the two.

Mrs. Webb says there are three courses open:

1. The *status quo* with minor improvements.
2. The Majority Report.
3. The Minority Report.

In (1) why not "major" improvements? Where does Mr. Booth and Sir Arthur Downes's scheme come in? Would this, tacked on to a thorough reform of the medical department based on its present outlines with a radical alteration of its administration, brought about by an extension of the powers of the Local Government Board, with a much better system of inspection by the upper board, be considered the "*status quo* with minor improvements"?

With regard to (3), Mrs. Webb says:

The last provides instant treatment for *all* in need, but safeguards private practice by providing for *rigorous charge and recovery*, so as to discourage resort to it to all families above bare subsistence (say 3s. a week per adult unit).

The italics are my own, but the "all" is inconsistent with the limitation, and the "rigorous charge," etc, is quite as deterrent as anything in the present system. Likewise, the "test" of 3s. a week per adult unit is a startling innovation on the tenor of the original report. —I am, etc.,

MAJOR GREENWOOD,
Honorary Secretary, Poor Law Medical Officers' Association of England and Wales.

London, N.E., Aug. 3rd.

HOSPITALS ON THE RATES.

SIR,—Professor B. Moore is right. It is the duty of the State to provide hospital accommodation for the sick, without making the patients paupers, sweating the medical staff, or converting the hospital governors into perpetual beggars. Of course it would cost a lot. Thus in Dublin there are about 3,000 beds in private hospitals. These cost an average of about £30 per annum for upkeep, equal to £90,000 a year—say 1s. 10d. in the pound on the rates. Probably when existing endowments were allowed for and the cost of country patients deducted, about an extra 6d. in the pound would provide for the upkeep of all the Dublin hospital patients without further begging. The best way for the present would be to give a capitation grant of 2s. 6d. per day per patient to the hospitals. Then any citizen should be admitted to any hospital he selected on production of his doctor's certificate that he needed hospital treatment. This would gradually pave the way for the evolution of a municipal hospital with a properly paid staff. Meanwhile, any money coming into a hospital lightens the burden of the medical staff.—I am, etc,

J. C. MCWALTER, M.A., D.P.H.,
F.R.F.P. and S.Glasg.

Dublin, August 6th.

CORONERS' LAW AND DEATH CERTIFICATION BILL.

SIR,—Your correspondent, "Unitas," appears very much aggrieved with the omission in this bill of a clause recommending the payment of a fee for the proposed new form of death certificate.

I have no doubt practically the whole profession will agree that it is unjust to make the examining of the dead body a statutory demand, thereby entailing increased labour without any offer of remuneration whatever. Take the instance of the doctor covering a large country area, having seen a dying patient on his morning round five miles away, and being compelled to do this journey again later in the day merely to certify the *fact* of death. Will this be done?

It is, however, only fair to mention that Sir William Collins pointed out in the State Medicine Section of the British Medical Association meeting last month that a clause dealing with fees might endanger the acceptance of the whole measure, inasmuch as a prejudice exists in the minds of M.P.'s that we are "out for fees."

No one, surely, would suppose that Sir William Collins is opposed to a fee being paid his brethren for work insisted on by the State, but it is obviously a question of diplomacy with him, as an experienced parliamentarian, to introduce the minimum amount of contentious material into the bill.

It is for us to decide whether we risk the rejection of an otherwise excellent bill amending coroners' law and death certification by insisting on what might prove a wrecking clause.

Still, in my judgement we ought to be able to eradicate this evil impression of our legislators that we are "out for fees," and replace it with the knowledge that we seek only a just claim.—I am, etc.,

WALTER ASTEN.

London, N., August 13th.

DEATH CERTIFICATION IN GUERNSEY.

SIR,—I send you a copy of the law of the island of Guernsey relating to death certificates and burials.

In every case of death here, either a doctor's certificate or an act of Court (finding of an inquest) must be produced before the Greffier (registrar for the whole island) grants the permit for burial. The law also states that this provision shall apply, as far as possible, to the case of stillborn children. For these cases special medical certificates, as enclosed, are provided. In the case of any doubtful certificates the Greffier refers the matter to me for a decision.

Another law provides that no body may be buried in any other place than a recognized cemetery, and that no cemetery or graveyard may be opened or enlarged without due formalities being observed, and the permission of the Royal Court being granted.

As a digression I may mention that no person may here exercise or carry on the profession or calling of a physician or surgeon without being fully qualified, and having his name on the current *Medical Register*, as well as being licensed by the Royal Court. It is thus easy to deal with unqualified practitioners if evidence to convict them be forthcoming.

Quite recently the secretary of the local Branch of the British Medical Association brought a flagrant case before the notice of the authorities, a bone-setter and "dream doctor" being fined the maximum penalty of the law for having medically attended a patient—namely, £20 and full costs or two months' imprisonment. For a second conviction the fine might be as much as £50 and costs. In this case the Attorney-General laid down that to practise as a "bone-setter" was to practise as a surgeon within the meaning of this law.—I am, etc,

HY. DRAPER BISHOP,
M.O.H. States of Guernsey.

Guernsey, July 13th.

"SANATORIUM TREATMENT OF TUBERCULOSIS."

SIR,—The unfortunate optimism of some early advocates of sanatorium treatment and their disregard of all influences outside their ordinary routine are now bearing fruit in an equally unfortunate pessimism on the part of many of the profession.

Judging from my own observation, I should say that the "open-air treatment" of phthisis, intelligently carried out, is an immense advance on former methods, and that a satisfactory sanatorium is of great value both educationally and therapeutically.

At the same time, I do not think the materials are yet to hand in this country on which to base a precise judgement. Not only must we have, for instance, in every case particulars of sex, age, social standing, temperature, extent of lesions, and presence or absence of complications, but we must know that the case was really tuber-

culous; yet in some instances, it seems to me, no sufficient care is taken to make sure of this fundamental particular.

Further—and on this I have no hesitation in laying stress; it is indeed to draw attention to this that I write—what is true for one sanatorium must not be taken as necessarily true for another. I feel fairly confident that the present methods of choosing sites for sanatoriums are unsatisfactory, and that it will be found, sooner or later, that the site of the sanatorium will prove to be much more important than is now generally held.

The way in which some able men seem unable to conceive of local climate as a possibly important factor in the cure of phthisis is to me very surprising. My own experience is not wide enough to be convincing—very large numbers of cases are needed—but it all goes to suggest to me that the same treatment carried out in what I should think a favourable situation gives better results than in what seems to me a less favourable.

The most promising way, I think, of approaching this factor of local climate is that adopted by Dr. C. Theodore Williams in his *Aërotherapeutics*, whereby a single central observer, or group of observers, classifies cases sent to different places and compares the results. The excellence of Davos, the inferiority of Pau, were thus demonstrated in pre-sanatorium days.

I would strongly urge, in any statistical inquiry into the value of sanatorium treatment, the comparison of the results obtained at different sanatoriums and the investigation of their relation to possible climatic influences. I purposely refrain from alluding to any one particular influence, for the investigation should be in all ways unprejudiced.—I am, etc.,

Exeter, Aug. 13th. W. GORDON.

SIR,—It is to me truly remarkable that Dr. Dutton finds that in by far the greater majority of cases "the results of the open-air treatment . . . are adverse to the patient." It would be interesting to learn precise details of the nature of these adverse effects. It is certainly true that after a course of treatment in a sanatorium patients feel distressed if they remain in a closed room, or sit in a crowded hall or a smoking room, but these are conditions which they are advised to avoid, and therefore I see nothing adverse in such a result. Beyond such effects I know of no harm caused by the open-air treatment.

It is certainly true that animals and birds "seem to have a deep-rooted instinct to avoid cold damp air," and the phthisical patient, along with the domestic dog and cat, likes to cuddle himself by a roaring fire. In the same way the infant and adult too, has a deep-rooted instinct to avoid taking ol. ricini and other nauseous drugs. Medicine is often nasty although beneficial.

Dr. Dutton suggests that patients believe themselves better merely by suggestion, and, on leaving, relapse and die. He is referring to very advanced cases in which no hope of recovery is held, and his own words show that the open-air treatment does cause improvement even in advanced cases, as otherwise they could not *relapse* into their former conditions on leaving; but to come to the conclusion that the relapse and death is the adverse result of the treatment—as he apparently does—is grossly illogical. The help of a trained statistician is certainly needed if such conclusions are being derived from the present available figures.

Suggestion is really most valuable. The atmosphere of a sanatorium has certainly a morbid tendency, which has to be combated by every means in our power, and nothing depresses a patient more and hinders his progress more than the thought that he is not making good progress. It has often struck me that the *spes phthisica* was a merciful dispensation of Providence, but a pity that it was not an earlier symptom. It is a grave charge to make against the treatment that all good done is merely a suggested belief. The sanatorium treatment is not to be estimated by the results in advanced cases; its aims are the arrest of the disease in the earlier stages, and I cannot see that the steady gain in weight to normal, the reduction of temperature, cessation of sweating, diminution and cessation of cough and sputum, and in many instances the disappearance of physical signs and of the tubercle bacilli from the sputum can be brought about merely by suggestion.

Results appear to have been very satisfactory, although it is regrettable that the condition of arrest has not always been reached. Do we not know how few cases are able to remain long enough under treatment? In many cases the patient has a wife and family to support, and rushes back to his work the moment he feels physically fit, with the inevitable result that the treatment is discredited. It has never been maintained that a patient discharged from a sanatorium is cured. He himself has to continue his life, trying to avoid all conditions which might tend to a relapse.

The question of the challenge put forth in the latter portion of Dr. Dutton's letter is merely a question of the most suitable locality for a sanatorium. If the medical and diet treatment are to be the same, it amounts to this: that he is in favour of the sanatorium treatment in a warm dry climate, more or less in favour of it in a cold dry climate, but cannot agree with it in a cold damp climate, for it seems evident that the heat and moisture of the atmosphere must depend on the climate of the country. Broadly, therefore, he advises a sanatorium on the high veldt of South Africa, but disapproves of all sanatoriums in the British Isles. I think it will be agreed by most that sanatorium treatment on the high veldt of South Africa is far more beneficial for early cases than any treatment in the British Isles, though it is disadvantageous in advanced cases owing to the altitude. In my experience with this treatment, as I applied it in South Africa, I have found that patients make much greater progress in the cool weather than in hot, and especially have I noticed that during times of misty weather, which sometimes occur on the high veldt, the condition of the patient is never worse, and very often is actually better, than when the atmosphere is dry. Another point is that hot dry climates, like that of Pretoria, are detrimental to the patient. Dr. Dutton's views of suitable air are certainly not supported by these facts.

Unfortunately, it is not possible for all phthisical patients to go to South Africa, and not even to the Continental sanatoriums, and therefore the only question to be answered is whether the sanatorium treatment in the British Isles is better than no open-air treatment at all. So far as I can see, the figures we now have prove the benefit of the treatment. Further statistics are certainly required, but in my opinion should deal in the main with early cases tabulated according to supposed susceptibility gathered from the family history. Thus it could be assumed that a patient of healthy parents had a normal immunity, whereas one of phthisical parent or parents had a susceptibility greater than normal. On the other hand, even the most straightforward statistics fail to convince all parties. Many persons are still opposed to vaccination.—I am, etc.,

London, S.E., Aug. 14th. A. E. H. PAKES.

SIR,—Statisticians seem to have come to the conclusion that the value of sanatorium treatment cannot, at present at all events, be decided by statistics. This appears to have led certain opponents of sanatorium treatment to the illogical conclusion that such treatment therefore has no value. The statistical method of proof as to the precise efficacy of any particular line of medical treatment must ever remain somewhat unsatisfactory, unless the results of some new treatment are startlingly successful. Furthermore, scientific statistical methods have only recently been applied to such problems and at best are not very applicable to them, for the factors affecting results are so numerous. Possibly before sufficient statistical data for a just conclusion as to the efficacy of sanatorium treatment can be collected, some new factor modifying the present line of treatment will have crept in and have become established. But surely the matter has already been decided by an appeal to common sense. I should very much like to know what ideas the opponents of sanatorium treatment have as to what constitutes the modern treatment of consumption. Six years ago I had definite symptoms and signs of slight phthisis. Except for one period of four months when I had a fresh outbreak (inaugurated by a concatenation of unfortunate circumstances quite beyond my control), I have followed my profession for the last five years under circumstances which may well be considered to be, at times at all events, somewhat exacting and arduous.

I know full well from personal experience what the

modern sanatorium method of treating phthisis is. I believe I have a good conception, too, of most alternative methods which have been or still are used to combat this disease. Personally I cannot understand how any one who really knows what is comprised in the sanatorium open air method of treatment could possibly fail to appreciate it, even though he saw partial failure or death follow such treatment in many a case. It comprises, according to my ideas, much more than simply "the open window." It has aptly been called "systematized common sense." The skilled supervision, for example, of rest and exercise, which helps to control as far as possible auto-inoculations, is perhaps as important as fresh air. The intelligent patient, whether an advanced consumptive or a slight and early case, learns not only the full value of a due amount of fresh air, but also many rules for his future guidance in maintaining improved or perfectly good health. He learns, too, how he can avoid being in any way a danger to other people.

Whatever disease a man may be suffering from, but perhaps especially in the case of chronic pulmonary tuberculosis, it appeals to me as sensible to send him to school for a period that he may learn as far as he can how Nature intended a man to live. It is easy to abuse the artificialities of modern civilization, but it is not always so easy to teach the wayward, and at times stupid, backslider from a healthy way of living the error of his ways. Surely that which gives the invalid suffering from consumption the best chance is to raise as quickly as possible the general health to its highest possible pitch, and to teach him as quickly as possible how to maintain it there; and my experience has taught me that neither of these things, but especially the former, can be accomplished without the use of "open air." By such means the power of resistance is restored, the best possible chance of arresting the disease given, and lastly, but of equal importance, if arrest is brought about, the best chance is given of keeping the disease arrested long enough to justify the assumption that the disease is cured.

Preventive medicine aims at preventing the human machine from getting out of gear, and curative medicine aims at so helping and controlling natural processes that they bring back to a healthy condition the complicated mechanisms of the human body—mechanisms for the most part still entirely beyond our direct control in spite of recent advances in vaccine treatment, "ergo-therapy," organo-therapeutics, etc. From my own experience I feel convinced that I should have taken far longer than I did to learn what constitute risks to my good health; exactly what my capacities for labour, mental and physical, are; and what requirements my body demands if I had never been under sanatorium treatment. In fact, I would go further, for I believe it is quite possible I should never have learnt much about such things had I not had the advantage of living in a sanatorium for a time, for I should quite possibly have died of phthisis years ago.—I am, etc.,

Mundesley, Aug. 14th. S. VERE PEARSON.

THE NATURE OF EROSION OF THE CERVIX.

SIR,—In your brief preliminary report of the discussion which followed Professor Gottschalk's lantern demonstration the microscopical appearances of erosions of the cervix, at the annual meeting of the British Medical Association, the following remarkable sentence appears: "It was pointed out to Professor Gottschalk that the term 'erosion' does not to the British gynaecologist imply any adenomatous growth as it seems to do in Germany." If your reporter had used the word "English" instead of "British" I should not feel called on to correct him, but even then it appears that he would be wrong.

I take Drs. Bland-Sutton and Giles's *Gynaecology* as representative of English opinion; I take Drs. Hart and Barbour's *Gynaecology* as representative of Scotland; and, for want of a better, I take my own as representative of Ireland. In the first named I read of "Adenomatous disease (formerly called *erosion*) of the cervical endometrium." In the second named I read, "The raw-looking surface" (of erosions) "is therefore a *newly-formed glandular secreting surface*, resembling in structure the cervical mucous membrane." In the last named I read, "The altered tissue" (of an erosion) "closely resembles the structure of an adenoma, and consequently the condition is sometimes described as an adenoma of the cervix."

I for one was certainly of opinion that no other view than that contained in these extracts was held by "British" gynaecologists, and I should be very interested to learn who was Professor Gottschalk's instructor. It is a pity that we should appear to be more ignorant than we really are.—I am, etc.

Dublin, Aug. 10th. HENRY JELLETT.

SURGICAL APPOINTMENTS IN ENGLISH HOSPITALS.

SIR,—Will you kindly insert in your next issue the appended copy of a resolution passed by the Council of the Association of Fellows of the Royal College of Surgeons, Ireland, at the meeting held on August 16th, in reference to an advertisement appearing in your issue of August 13th last, inviting applications for the post of Honorary Assistant Surgeon to the Manchester Royal Infirmary and Dispensary, and specifying that applicants must be Fellows of the Royal College of Surgeons, England?—We are, etc.,

F. G. ADYE-CURRAN,
President.
ANDREW CHARLES,
ROBT. P. MCDONNELL,
Honorary Secretaries.

The Association of Fellows of the Royal College of Surgeons in Ireland, Royal College of Surgeons, Dublin, Aug. 17th.

The attention of the Association of Fellows of the Royal College of Surgeons, Ireland, having been drawn to an advertisement of the Manchester Royal Infirmary and Dispensary for an honorary assistant surgeon, where it is stipulated that candidates must be Fellows of the Royal College of Surgeons, England,

This Association hereby protests against such invidious distinctions being drawn between the Irish and English Colleges, inasmuch as the Fellowship of the Irish College is in every way equal to that of the English College, and also that some of the most eminent surgeons in England at the present time are Fellows of the Royal College of Surgeons in Ireland.

MASSAGE IN BERI-BERI: A DISCLAIMER.

SIR,—My attention has been drawn to a paragraph in the *Times* of August 17th concerning the treatment of beri-beri at the Seamen's Hospital, Albert Docks, London, E., with which my name is connected. I wish to state that I have nothing to do with the treatment of cases of beri-beri at the hospital, nor have I heard of Swedish movements and massage being employed in the treatment of beri-beri.—I am, etc.,

London, W., Aug. 17th. JAMES CANTLIE.

The Services.

ROYAL ARMY MEDICAL CORPS.

EXAMINATION OF MAJORS FOR PROMOTION.

WITH reference to footnote to Appendix XIV. of the King's Regulations, it is notified that the subjects selected for the year 1911 will be as follows:—

Subject 3. (i.)—The Medical History of the German Campaign in South-West Africa. A report on this subject will be found in the numbers of the *Journal of the Royal Army Medical Corps* for August and September, 1910, entitled "A Report on the German Campaign in South-West Africa, 1904-1906." (Summarized from *Sanitäts-Bericht uber die Kaiserliche Schutztruppe fur Sudwestafrica während des Herero und Hottentotenaufstandes* vom 1 Januar 1904 bis 31 Mai 1907. Erster Band. Administrativer Teil.)

Subject 3. (ii.)—The Medical Service of the Austro-Hungarian Army, with special reference to its organization (and that of Voluntary Aid) in time of War. Book recommended: "Handbook of the Medical Services of Foreign Armies, Part III, Austria-Hungary."

A LEA-FRANCIS bicycle which recently came under notice was found to be fitted with aluminium pedals, studded with rubber. They were light and seemed to give a firmer grip than ordinary pedals. The device has been patented. The make of a pedal is a small item, but it is by attention to small details that the Lea-Francis and other high-grade machines have built up their reputations.

UNDER the will of the late Mr. Peter Hubert Desvignes of Weybridge, Guy's Hospital receives a sum of £6,000 and the residue of the estate, which would appear to amount to a further £8,000. Bequests of £500 each are made to the Weybridge Cottage Hospital and the British Medical Benevolent Fund.

Obituary.

FLORENCE NIGHTINGALE,

MEMBER OF THE ORDER OF MERIT.

Florence Nightingale—almost equally well known as the Lady of the Lamp—died at her residence in South Street, Park Lane, in the afternoon of Saturday, August 13th. She had not been in her usual condition of health for some little time, and in consequence had been receiving professional visits from her friend and medical adviser, Sir Thomas Barlow. She was in the ninety-first year of her age, and the immediate cause of death was heart failure. Her interment is taking place this week, and in accordance with wishes, expressed by her both verbally and in her will, will be accompanied by ceremonials of as simple and private a character as possible.

Nevertheless, it is probable that a suitable memorial of her life will eventually find a place in Westminster Abbey. None, however, of the great dead of the past few centuries could equally well perhaps dispense with such an honour, for in her work she built for herself a *monumentum ære perennius*. Since the time when it was first acquired over fifty years have passed, and during the interval she had led, so far as the general public is concerned, a very secluded existence. Nevertheless, her name still remains a household word.

All that is here possible is to draw attention to the more essential features of her life. Social and all other conditions have so greatly changed from what they were during the more active portion of Miss Nightingale's career that even a very lengthy biography, unless written by an exceptionally gifted person, would be unlikely to convey a faithful conception alike of the woman herself and of those for whom and with whom she did her great work.

Florence Nightingale was born in 1820, her father being a Mr. Shore, who, on inheriting estates in Yorkshire and elsewhere, had taken the name of Nightingale. Her maternal grandfather was one of the many philanthropists who between them helped to bring about a cessation of the slave trade. She was born in Florence, from which city she received her name, and was educated on somewhat unusual lines. Surrounded by persons of high cultivation, she was trained in classics by her father himself, was taught several languages, and was taken about on travels throughout Europe. She had no brothers and only one sister.

In due course she "came out," was presented at Court, and commenced the ordinary life of an heiress of the day. As her father was a man both of unusual wealth and the head of one of the great county families, this was an inevitable step, but it may safely be assumed that "coming out" did not mean for Miss Nightingale quite what it does for most young women. The girl in her case seems to have been very decidedly the mother of the woman. As a child she had exhibited a practical and enduring interest in the occupations which afterwards became the centre point of her life.

Arrived at womanhood she began a definite study of hospitals and like institutions; and when aged 29, and practically her own mistress, entered the Kaiserwerth Institute in Germany as a probationer nurse. Six months later she put herself in the hands of the Sisters of St. Vincent de Paul in Paris; and, finally, on her return to England, took over the management of the Home for Invalid Ladies in Harley Street. It was a step which created a great deal of talk in society—a term which fifty years ago covered a much narrower group than it does at the present day—for while nursing was only just beginning in this country to be recognized as an occupation in any wise fit for ladies, she herself, as a talented, rich, and decidedly good-looking, young woman, seemed to have everything at her feet.

Some three years later the Crimea war commenced, and very shortly afterwards accounts of the great sufferings of the troops began to reach England. Public feeling, already aroused, was brought to a head by the famous war correspondent, Russell, who in a picturesque letter called on "the daughters of England" to rise to the occasion. The call was immediately answered, among those who tendered their services to the War Office being Miss Nightingale. Her letter crossed one from Mr. Sidney Herbert, offering her complete control of all nursing arrangements if she would go out, and a free hand in respect of stores. His letter included the following words, which show precisely why she was chosen, and in some degree why she was successful:

> Your personal qualities, your knowledge and your power of administration, and, among other things, your rank and position in society give you advantages in such a work which no other person possesses.

She of course accepted the offer, and, thanks to her previous experience, had got together a satisfactory staff of thirty-seven women in less than a week. Ten she drew from among Roman Catholic Sisters of Charity, eight from Protestant Sisterhoods, six from the St. John Nursing Institute, and the balance from other sources.

Travelling over land via Marseilles the party arrived at Scutari, the scene of its labours, at the beginning of November, 1854. The work which it had to do, and which it actually did in such fashion as to excite the most enthusiastic gratitude both among the wounded and in England, can only be generally indicated by recalling certain facts. On the one hand hospitals even in England were still very rough institutions, antiseptics were unknown, and chloroform rarely used. On the other, the place used as a base hospital was merely a barrack at Scutari, about two hundred miles by sea from where the men were wounded or first fell sick; the war had been preceded by forty years of peace; the nursing orderlies were totally untrained and recruited from the veriest riffraff; and of the whole army of about 30,000 men some 10,000 were already either wounded or ill. The number increased later on, but meantime assistance in the way of material and personnel had poured in and matters had greatly improved.

Miss Nightingale did not return home until the very last of the hospitals had been closed. A man-o'-war had been told off to convey her home as a mark of the Government's share in the enthusiasm created by the work of herself and her assistants, but quite characteristically she came home alone in a foreign ship under an assumed name. The gift of £50,000 raised by public subscription in her honour she directed should be used in founding a school for nursing—the present Nightingale Home. As soon as possible she withdrew herself from public notice, and for the rest of her life led a very quite and for many years semi-invalid existence. It was, however, one of a very busy kind, as her advice and assistance on matters directly and indirectly connected with nursing questions were constantly sought by public and private personages. Of nurses themselves she remained the most loyal friend to the very end of her life. In its course she received many, but always unsought, honours, among them being the highest which it is in the power of the Crown to bestow, admission to the Order of Merit.

Much of her reputation Miss Nightingale owed to the rank and file of the army itself. She became identified in their minds with the ameliorated conditions which followed the arrival of her party, and personally known to many of them owing to two circumstances. Despite her manifold occupations as an organizer and administrator, she made a practice of being present at operations, and lamp in hand of going round the wards at some time during the night to see that everything was in order. This was the origin of the term "Lady of the Lamp," applied to her in Longfellow's poem.

Miss Nightingale's work is frequently described as if she had done it single-handed, but she, of course, received splendid assistance from her nurses and would have been the last to deny them their share of honour. It is to her, however, that all credit is naturally given, since hers was the task of inspiration, organization and administration, and of finding a way round a thousand and one difficulties. Among them was not, as has been sometimes stated, any opposition from the medical staff. Its members recognized from the first her real knowledge and great abilities, and she in her turn fully appreciated their labours. Throughout her evidence at the subsequent commission of enquiry she steadfastly laid the blame for the breakdown which had arisen on the shoulders of the War Office itself.

She was never in any sense of the word an amateur, and constantly made obvious her contempt for work of this order. Her books and the few semipublic letters she wrote

convey a very true impression of the woman herself. They show a clear insight into first principles, absolute freedom from cant, and a person who is before all things practical, but possessed of humour, and regarding work entrusted to her unwilling to brook interference of any kind. They also offer further proof of how little novel many "new" ideas are. One book written fifty years ago contains a statement adumbrating the "new" idea that the phenomena of disease are merely evidence of healthy reaction by the organism; and elsewhere she anticipates a justly renowned American professor of pediatrics, who has recently proclaimed that the chief source of infant mortality is not artificial feeding, but neglect of home hygiene. It is, indeed, less Miss Nightingale's work in the Crimea and in connexion with nursing than her early advocacy of hygiene which entitles her to notice in these columns.

She saw the need so near and great,
And to that need was consecrate;

Her arrowy vision, swift yet sane,
Ranging the astral heights of pain,

Discerned, to change, the casual chance
And wanton waste of Ignorance.

High soul with strange mysterious pow'r!
Strong angel of an angry hour!

The heav'nly brood thy hand set free
In those dark dawns of Scutari

Has flown by instinct of the dove
With tidings of thy healing love,

For ev'ry suff'rer's pain-rack'd need
To cheer, sustain and intercede;

The voice that to the soldier's ear
Whispered the word that cancell'd fear

Indwells when droops the raging sword,
Fulfill'd with mercy of the Lord,

Remains, when voices die away,
An echo of undying day.

G. H. R. D.

MARY ADAMSON MARSHALL, M.D.Paris.

The death of Mrs. Marshall, M.D., which occurred at Watford, on Monday, August 8th, removes one of the most widely known and respected medical women in Europe.

Mrs. Marshall was born in January, 1837. She was one of a family of twelve. Her father, the Rev. Dr. Anderson, had twice thrown up his living for "conscience sake," his views as to Church government and doctrine not agreeing with those of the majority. Her mother, a woman of rare distinction of mind and character, died when Mary Anderson was a young woman. Dr. Anderson had previously started a large and flourishing residential boys' school, known over the North of Scotland. His daughter at once took charge of the household and of the domestic side of the school. Some years later Dr. Anderson married again, and his daughter then felt free to leave home and to study medicine. She entered the recently opened Medical School for Women at Edinburgh, and went through several classes with distinction. In 1871 she married Mr. Claud Marshall, a solicitor of Greenock.

A few months later her husband died. A son was born, but he lived only a few days. In 1874 Mrs. Marshall resumed her studies in London, and after a time, wishing to get the M.D. degree, she went to Paris. Thanks mainly to the help of the British Ambassador, Lord Lyons, the Paris University, which had already given the M.D. degree to Miss Garrett and Miss Putnam, agreed to accept Mrs. Marshall's certificates taken in Edinburgh and London, on condition that she should repeat in Paris most of the clinical work and many of the senior courses of lectures. She completed her course with much distinction in 1882. She obtained the M.D.Paris, and in addition the diploma which gives permission to practise medicine in France. Her thesis for the M.D. of Paris on *Mitral Stenosis* has been referred to by several authors as a notable contribution to our knowledge of this subject.

Mrs. Marshall practised for some years in London, and she was on the staff of the New Hospital for Women. In 1895 she moved to Cannes, where she became widely known and much respected. She was immensely kind to every one who came into her circle, and to her patients above all. She also was rich in common sense, good judgement, and good taste. In her dealings with her fellow practitioners in London and at Cannes she was absolutely loyal, just, and considerate.

Mrs. Marshall's health had been failing for some time, and she had a severe illness last spring which warned all her friends that her life was precarious, though, thanks to Dr. McDougall's care and skill, she recovered for a time, and was able to return to England. Her final illness was pneumonia of two days' duration.

Mr. Frederick Weatherly, M.R.C.S., died recently at Portishead, Somerset, at the age of 90. He was educated at Great Ealing School, and passed the "College and Hall" in 1841. After forty years of active and professional work in the West of England he retired and devoted himself to public work. He was for many years a Poor Law guardian and chairman of the Bedminster and Long Ashton Boards. He filled several other public offices He was a J.P. for Somerset, and was formerly Surgeon-Major in the 1st Gloucestershire Volunteer Artillery. He had eight sons and two daughters, among the former being Dr. Lionel Weatherly, to whose initiative was largely due the establishment of Winsley Sanatorium, near Bath.

Universities and Colleges.

UNIVERSITY OF LONDON.

University College.

Appointments.

Dr. R. H. Aders-Plimmer and Dr. W. B. Tuck have been appointed Teachers of Chemistry to Medical Students, and Mr. H. J. Page Demonstrator in Chemistry and Physiological Chemistry to Medical Students.

Vacation Courses in Chemistry, Physics, Biology, Anatomy, and Physiology, for Medical Students begin on September 1st.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

Barker Anatomical Prize.

The Barker anatomical prize for 1911 is offered for a dissection of the first, second, and third cervical nerves from behind. The prize, which is of the value of £21, is open to any student whose name is on the anatomical class list of any school in the United Kingdom. Preparations must be received on or before April 30th, 1911, by the curator, from whom further particulars can be obtained.

Medical News.

The Brussels Exhibition was burnt down on the evening of August 14th. The British Section, including exhibits by leading firms of surgical instrument makers and drug manufacturers, was completely destroyed.

On August 10th Professor Albert Eulenburg, the distinguished neurologist of Berlin, celebrated the completion of his 70th year.

Dr. William Martin, of Thorne, Doncaster, has been appointed to the Commission of the Peace for the West Riding of Yorkshire.

His Majesty the King has consented to become a patron of the Earlswood Asylum, the well-known national training school and home for the feeble-minded at Redhill, Surrey.

Madame Catherine Schumacher, widow of the Marquis de Guerry de Beauregard de Maurreuil d'Orvault, has, in addition to a large number of legacies for philanthropic purposes, bequeathed £40,000 to the Pasteur Institute, Paris.

Arrangements have been made for the Orient liner *Ophir* to visit Norway and the ports of the northern capitals during a cruise starting on August 27th. The point of departure is Grimsby.

On Tuesday, July 26th, Prince Alexander of Teck, Grand President, and Princess Alexander of Teck, Lady Grand President of the League of Mercy, attended a meeting at St. James's Palace, and were received by Sir William Collins, M.P., and Mr. James Harrison, M.V.O., honorary secretaries, and by the executive council of the League. The Order of Mercy was presented to a number of persons, among them being Mr. Alexander Thomas Scott, M.R.C.S., of Camden Road, and Dr. Chearnley Smith of Worcester Park. The Order of Mercy is conferred with the approval of His Majesty the King, the names being submitted to him by the Grand President for approval.

Medico-Legal.

PARTNERSHIP EXPENSES.

EQUITY.—A. is the senior partner and B. the junior, each having a half share in the practice. The partnership work is chiefly done at B.'s house, each of the partners attending there on alternate mornings and evenings. A. sees a few patients at his own house, but not more than a dozen during the year. Should anything be charged in the partnership expenses for the cleaning, heating, and attendance connected with the waiting and consulting rooms in B.'s house? If so, what is a fair and reasonable way of arriving at such expenses?

*** The items mentioned are clearly partnership expenses. The amount should be settled by mutual agreement, but it would be impossible from the details given to point out how it might be reasonably determined.

FEES TO MEDICAL WITNESSES.

A CORRESPONDENT complains that he was only allowed a fee of half a guinea for giving evidence before the borough bench in a case which was committed for trial at the assizes. He wishes to know if he is entitled to more.

*** If our correspondent resides within the borough he can only claim half a guinea; if outside, he is entitled to a guinea.

A QUESTION OF COSTS.

CLOVELLY sends the following query: A. purchases a practice from B., and also leases the house, which belongs to B., A.'s solicitor acting for both parties. Should the costs be shared, or is A. liable for them?

*** The usual course is for each party to employ his own solicitor, but in the absence of agreement to the contrary the expense of drawing up the lease would fall on A.

CLOSING OF CONTRACT FOR MEDICAL ATTENDANCE.

A. G. writes: In closing a contract for medical attendance in the wording of which no stipulation as to giving any notice is mentioned, (1) Can the patient demand such notice? (2) If so, how long?

*** (1) Where no time is fixed a reasonable notice is customary. (2) The time, when periodic payments are made under the contract, is often taken by a court of law as a guide in deciding under all the circumstances what would be a "reasonable" notice. In this case probably three months would be considered a "reasonable" notice. In all contracts of this kind it should be clearly laid down what notice is to be given on either side.

Medico-Ethical.

The advice given in this column for the assistance of members is based on medico-ethical principles generally recognized by the profession, but must not be taken as representing direct findings of the Central Ethical Committee, except when so stated.

COVERING.

G. F. WHITE.—To place an unqualified assistant in charge of a practice some miles away would, we have no doubt, be regarded by the General Medical Council as a breach of its regulation concerning the employment of unqualified assistants, and would render the practitioner offending liable to have his name removed from the *Medical Register*. If our correspondent desires to proceed in the case, he had better write to the Registrar of the General Medical Council, who will inform him of the steps he should take in order to bring the matter to the notice of the Penal Cases Committee.

HUSBAND AND WIFE.

G. P. complains that his wife, who is separated from him, has opened a nursing home within five minutes' walk of his house, and he further, in our opinion unreasonably, complains that medical men who are known to him have sent patients to the home. He seems to consider that this is a breach of professional etiquette, or even of ethics, but we are unable to understand on what ground he thinks so. We can sympathize with him in the unpleasantness of having a wife from whom he is separated starting a nursing home so near to him, but his grievance seems to us to be solely against her, and any remonstrances he may be in a position to make should be addressed to that quarter.

Public Health AND POOR LAW MEDICAL SERVICES.

BERI-BERI IN THE UNITED STATES.

ACCORDING to reports published by the Public Health and Marine Hospital Service, sporadic cases and outbreaks of beri-beri have occurred in several States. In 1890, we learn from the *New York Medical Journal*, several cases of what was possibly beri-beri were reported among New England fishermen, and in the same report mention was made of other cases of what seemed to be the disease antedating these by ten years. Seventy-one cases were reported among the patients in the State Insane Hospital at Tuscaloosa, Alaska, during the years 1895 and 1896, of which 21 were fatal; 64 of the patients were white and 7 negroes. A somewhat similar outbreak was reported to have occurred in 1895 at the Arkansas State Insane Hospital at Little Rock. The superintendent of the Texas State Lunatic Asylum at Austin, in his annual report for the year ending August 31st, 1907, stated that in the early part of July an epidemic of beri-beri developed in that institution, and that there were over 200 cases, with 20 deaths. It was also stated that since 1891 there had been each year a few cases of the disease, but that it had never assumed an epidemic form until 1907. In the monthly bulletin of the Californian State Board of Health for December, 1909, there was published a list of 25 deaths from beri-beri reported in California during the years 1907, 1908, and 1909. Of these 22 were Japanese, 2 Chinese, and 1 German. An outbreak of beri-beri among convicts in South Carolina was reported on April 8th in the Public Health Reports. There were at least 17 cases and several deaths. The diagnosis was confirmed by an officer who had the opportunity of observing the disease in the Philippine Islands. The local physicians stated that similar cases had occurred not infrequently in past years.

CLEANSING OF BUG-INFECTED ROOM.

DR. G. H. MAPLETON (Goudhurst) writes: If "Antiparasite" will brush crevices with a feather dipped in a strong solution of corrosive sublimate in rectified spirit I will guarantee he will not see another bug.

RURAL HYGIENE.

AJAX.—The following books would be useful to a newly-appointed medical officer of health for a country district, with special reference to drainage, etc.: *Practical Sanitation*, by Reid and Manley (Charles Griffin and Co.); *The Drainage of Town and Country Houses*, by G. A. T. Middleton (Batsford); *Theory and Practice of Hygiene*, by Notter and Firth (Churchill); *Sewage and Sewage Disposal*, by S. Rideal (Ingram).

THE annual meeting and banquet of the Brussels Medical Graduates' Association were held in the Kaiserhof Restaurant of the Brussels Exhibition on Saturday, August 6th. Amongst those present were Dr. Richard Paramore (president), Sir Griffith Boynton, Bart., Mr. Mortimer Ehrlich, Mr. W. F. Kirby, F.Z.S., Dr. Kirby, Dr. Fountain, Dr. Howard Humphris and Dr. Arthur Haydon (honorary secretary). After the toasts of the King of England and the King of the Belgians, the president, Dr. Paramore, read letters of regret for inability to attend from Professor Rommelaere, president of the university, Professor Thiriar, Professor Hauben, and M. Lavachery, secretary of the university. He then gave the toast of the visitors, coupled with the name of Sir Griffith Boynton, who, in responding, remarked upon the enterprise of holding an annual meeting in Brussels, and expressed his pleasure at being able to be present, and proposed the toast of the Brussels Medical Graduates' Association. Dr. Arthur Haydon, honorary secretary, in responding, said that during the twenty-five years of the existence of the association this was the first annual meeting which had been organized in Brussels; and in spite of all the difficulties and disappointments it had been accomplished. There were about 600 British graduates of the University of Brussels in all parts of the world, and this number was steadily increasing. And this proved that the value of study abroad had been appreciated by so many. Dr. Haydon hoped that the next annual meeting of the association held abroad would be at the Paris Exhibition of 1920. At the annual meeting Dr. Francis Edwards was elected president for the ensuing year, Dr. E. O. Fountain, vice-president, Dr. Major Greenwood, honorary treasurer, and Dr. Arthur Haydon, honorary secretary; ten members of council were also elected. All past presidents were elected presidents. A dinner of the association was also held at the Japan-British Exhibition on Tuesday, July 19th, at which 23 members and guests were present, Dr. Jago and Dr. Oliver being the guests of the evening.

Letters, Notes, and Answers.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

COMPRESSION OF THE ABDOMINAL AORTA.

SANGUINIS asks how best to apply compression of the abdominal aorta in *post partum* haemorrhage, and how long must it be kept up?

*** With the ulnar edge of the hand against the vertebral column. It must be kept up till bleeding has stopped and the uterus has contracted.

MEDICAL INSPECTION OF SCHOOL CHILDREN.

S.M.O. writes: I should be much obliged if you can advise me whether it is any part of a school medical officer's duty to visit the children in their homes for inspection purposes.

*** No. School inspections should only be done at the school; at the same time, there is no law to prevent the school medical officer following up special inquiries by visits at the homes, although generally this is inadvisable. The London authority now prints on its notices a statement that medical examinations will only take place at the schools.

ANSWERS.

TUMULTUOUS FETAL MOVEMENTS.

LIEUTENANT-COLONEL PIKE (Tidworth) writes: I think "M." will find the movements greatly lessened if he applies a binder or abdominal belt firmly round abdomen in patient going to bed. I have found it satisfactory in several cases, and think drugs of any kind are both useless and harmful. I have never met with these excessive movements in first pregnancies.

IN answer to "M.," who asks for suggestions for treatment of "tumultuous" movements in pregnancy, "R." desires to say that she has found the following simple measures of great benefit in many cases: (1) The taking of short rests, with the feet up on a bed or sofa, at intervals during the day—ten to twenty minutes at a time. (2) On going to bed at night the recumbent position ought to be assumed gradually over a period of half an hour or so; it can easily be done by using several pillows and removing them in succession. If during this half hour the patient's abdomen and legs are gently rubbed upwards great relief and comfort follow. (3) The wearing of a well-fitted abdominal belt throughout the day is also useful.

LADY DISPENSERS.

B. A. J. F.—All who desire to become qualified dispensers must decide for themselves which of the two possible ways is best suited to their case. The one is to take the Minor Certificate of the Pharmaceutical Society, the other to take the Assistant's Certificate of the Society of Apothecaries. The former entails a three years' curriculum, including a preliminary examination in general education, apprenticeship, attendance at regular courses of instruction in botany, materia medica, chemistry, and other subjects, and the passing of an examination therein. The cost of undergoing such a curriculum almost necessarily varies in each case, but in none could it be put down, all expenses included, as less than £100. The holders of this certificate are entitled to do all work ordinarily done by chemists, including the opening and keeping of shops, and can claim legal registration as chemists and druggists. There is an Association of Women Pharmacists, Gordon Hall, Gordon Square, W.C., from which ample information on the subject can be obtained. Candidates for the Assistant's Certificate must undergo a course of instruction in practical pharmacy for six months and must be certified as having done so either by a registered medical practitioner, a registered pharmacist, or an assistant of the Society of Apothecaries, holding a public appointment. They have to undergo two examinations—the one a practical test of their ability to compound and dispense medicines, and the other an oral examination in materia medica, chemistry, and pharmacy, and the translations of prescriptions. Examinations are held towards the end of the first month of each quarter throughout the year. The examination fee is 5 guineas. A syllabus can be obtained on application to the Clerk of the Apothecaries' Society, Blackfriars. In view of the wider field open to its holders, the minor certificate must certainly be regarded as the more desirable possession, but holders of the Assistant's certificate are frequently employed at hospitals and dispensaries, and by medical men who conduct dispensing practices, and they are eligible for appointment at any of the institutions maintained by Poor Law authorities, including the Metropolitan Asylums Board. Experience seems to indicate that dispensing is a very suitable occupation for women, and one of a pleasanter kind in its surroundings than are many of those by which women now gain their living. It is not possible to state the average salaries received, as the conditions of appointment vary too greatly; but it is certainly not one of the best paid classes of work.

PERSISTENT PAIN.

ASPIRIN writes in reply to "Pakeha's" query, published on August 6th (p. 360): I would suggest that he gives his patient 15 grains of aspirin at bedtime, say three 5-grain tablets each night for three nights.

PHYSIOGNOMY.

PHIZ.—The following works deal with physiognomy: Lavater, *Essays on Physiognomy for the Promotion of Knowledge and the Love of Mankind;* Sir C. Bell, *Anatomy and Philosophy of Expression*, 1844; J. Shaw, *Physiognomy of Mental Disease and Degeneracy*, 1903; Mary Stanton, *Encyclopaedia of Face and Form Reading*, 1895; J. Simmons, *Physiognomy Illustrating Nature's Revelation of Character*, 1891; Walker, *Physiognomy founded on Physiology*, 1834. These are in English. There are several others in French, German, and Italian, besides a number of articles in periodicals. References may be found in the *Surgeon-General's Catalogue*, Second Series, vol. viii, p. 316.

LETTERS, NOTES, ETC.

ACADEMIC COSTUME.

"RED SANDSTONE" writes: Neither your original note nor the letter of "Scarlet Lightning" (the latter in your issue of August 6th) is quite accurate, as you will see by the following extract from Regulations made May 23rd, 1910: "Graduates shall wear hoods of the Cambridge pattern." "The hoods of Bachelors shall be of stuff *or* silk." "The hoods of Masters and Doctors of silk." "Hoods shall in all cases be of a registered colour which colour shall be called 'University red.'" "Masters' hoods shall be lined throughout with white silk." "Doctors' hoods shall be lined throughout with salmon-coloured silk." The distinctive point of the Bristol hood is that it is coloured not black, the colour being a dark red. There is no distinction between faculties, the hoods of the Arts, Science, Medical and Engineering graduates being precisely similar for each grade, but the grades are distinguished by the white lining of the Master's and the salmon colour of the Doctor's hood. The Bachelor's hood is of the same colour throughout, but being lined with silk the lining gives a slightly different shade of colour.

*** The extract from the regulations supplied by our correspondent hardly clears up the point at issue. Our first correspondent said that the Bristol hood was a black hood lined with Bristol red and edged with salmon silk. In thus correcting us we knew that he himself must be inaccurate, for the information concerning Bristol in our tabular summary of the main points of various academic robes had been kindly supplied by the official of Bristol University most likely to be acquainted with the subject. It did not seem worth while however, to discuss the matter, as Bristol only having recently attained university rank there are unlikely to be many wearers of M.B. robes for some time to come. Judging from the statements now made by our present correspondent, the regulations of the University questions must be open to more than one interpretation; if so, they are all the more in keeping with those of older universities. Nowadays it would appear to be university robe makers such as Messrs. Ede, Son and Ravenscroft who finally settle these decorative details.

"CURE" FOR EPILEPSY IN THE CHANNEL ISLANDS.

IN November last we published a note on a liquid supplied for the treatment of epilepsy, which was submitted by a correspondent who stated that it had a considerable sale in the Channel Islands; examination then showed it to contain potassium and ammonium bromides, with sugar, infusion of gentian, and chloroform water. We have now received a further quantity from a correspondent for quantitative determination of the bromides; the amounts of these prove to be 31.5 grains of potassium bromide and 22.7 grains of ammonium bromide in each fluid ounce, or about 8 grains and 5½ grains respectively in the dose of two teaspoonfuls. At the price of 1s. 6d. per 8-ounce bottle, which our correspondent believes is charged for it, the gross profit cannot well be less than 1s. 4d., and the considerable sale which it enjoys must therefore be very remunerative to the proprietor.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Eight lines and under	0	4	0
Each additional line	0	0	6
A whole column	2	13	4
A page	8	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *postes Restante* letters addressed either in initials or numbers.